

MATERIAL HANDLING **FLOW**

AUGUST 1954

HANDLING • AUTOMATION • PACKAGING AND SHIPPING



**Mechanized Handling From
Harvest to Processing. . . 69**

**Flow Systems in Food
Processing . . . 78**

**Callao . . . South America's
Most Modern Port . . . 86**

**Mechanized Pre-Packaging of
Fresh Produce . . . 104**

**Nomogram for Solving
Cushioning Problems . . . 110**



Flow Circulation

**{ 35,827 FLOW BASIC
108,509 FLOW QUARTERLY**



Westinghouse Air Brake Company's **NEW FRONT END LOADER**

GOOD VISIBILITY, with the bucket up, down, or in the carrying position, helps the operator work fast because he can always see his work. There are no structural steel frames to get in his way.



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ACTION speeds loading. Operator can burrow into load and get a full bucket in just one pass. Newly designed transmission reduces normal reversing time about 95% . . . further increases efficiency and maneuverability.

You can maneuver it easily *inside* boxcars, in and out of small storage bins, through narrow passageways, around pillars and stacked materials. This new loader's small size and simple operation speed handling of bulk materials and reduce costs in chemical, cement, and fertilizer plants, as well as foundries.

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This new Westinghouse TL-50 Front End Loader weighs 5250 lbs., is powered by a husky Le Roi gasoline engine. Write for complete details.

NEW MOVIE AVAILABLE entitled, "AT THIS MOMENT"—showing a vivid story of modern railroad progress. Length 26 minutes, on 16mm color sound film. For use of film write: United World Films, Inc., 1445 Park Ave., New York, or Association Films, Inc., 347 Madison Ave., New York.

Westinghouse Air Brake COMPANY

INDUSTRIAL PRODUCTS DIVISION



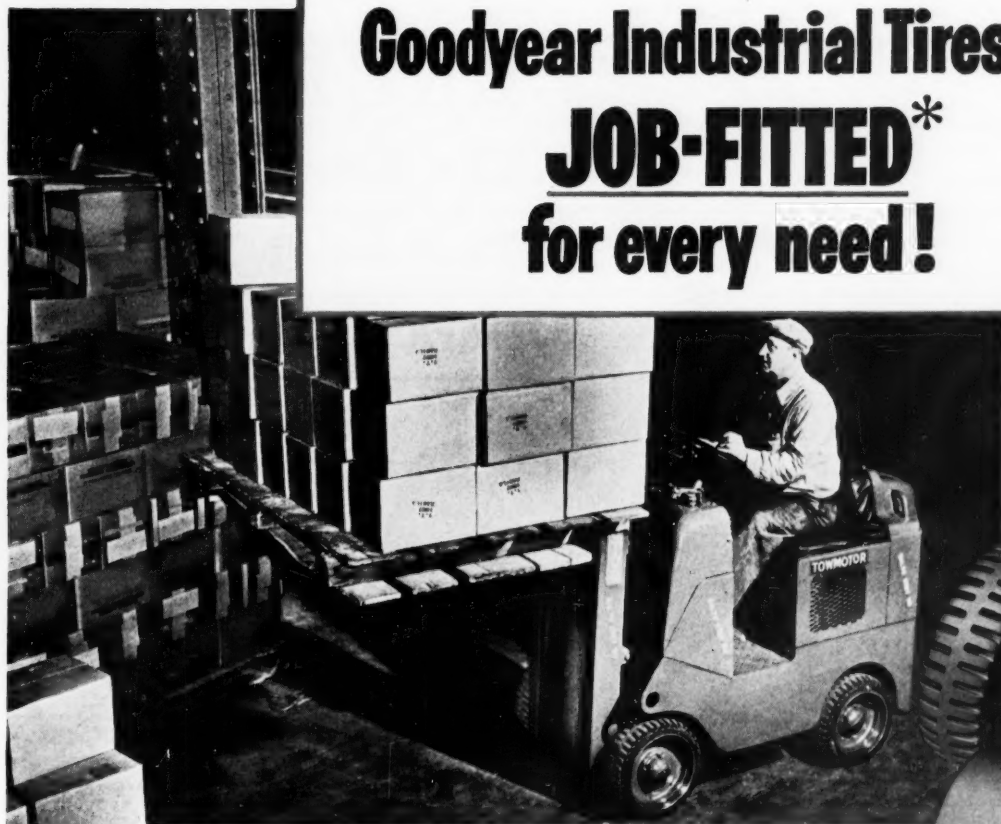
WILMERDING, PENNSYLVANIA

Manufacturers of air compressors, pneumatic cylinders, actuators, air control devices, engineered pneumatic control systems and front end loaders.

Factory branch: EMERYVILLE, CALIF. Distributors throughout the United States...Consult your Classified Directory. Distributed in Canada by: Canadian Westinghouse Co. Ltd., Hamilton, Ont.

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Goodyear, Industrial Tire Sales, Akron 16, Ohio

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GOODYEAR

INDUSTRIAL TIRES

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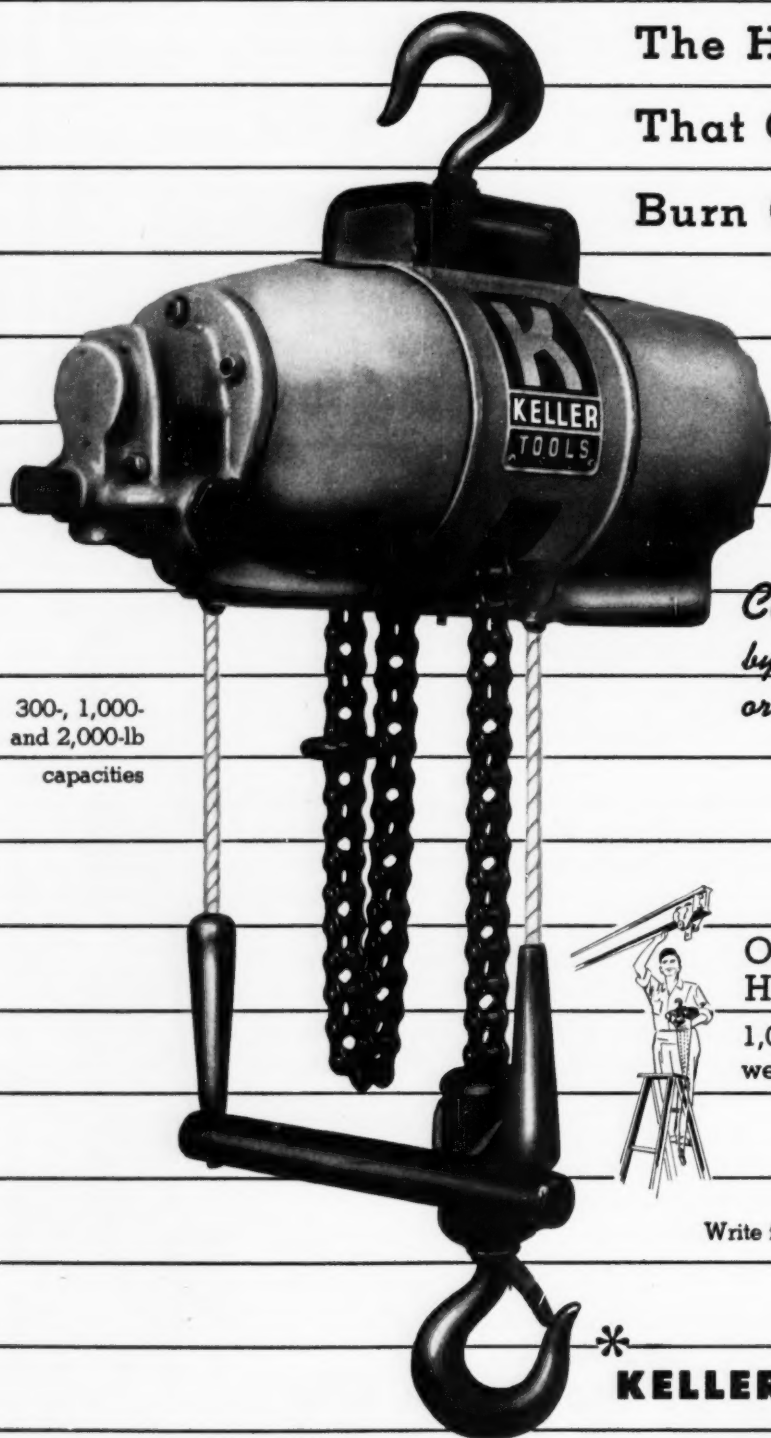
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Xtra Cushion, All-Weather, All-Service—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

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Burn Out



300-, 1,000-
and 2,000-lb
capacities

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from rapid reversals*

*Can't Be Damaged
by continuous service
or stalling under load*



ONE MAN
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weighs only 28 pounds

Write for Catalog 86



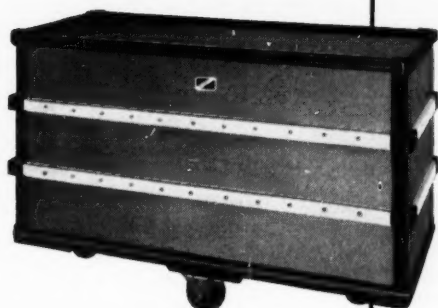
* **KELLER AIR HOISTS**

KELLER TOOL COMPANY
1321 FULTON ST., GRAND HAVEN, MICH.

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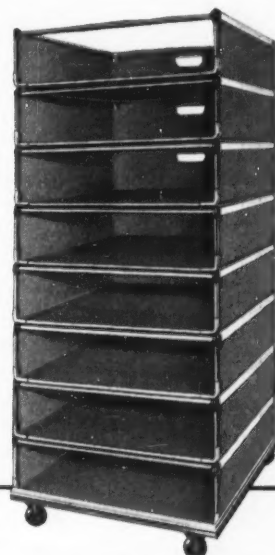
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ACROSS INDUSTRY
...FROM CAKES TO
CASTINGS



TRAVELING TIME . . . And when aren't things on the move in busy department stores, mills, warehouses, hotels, factories, etc. These tough, easy moving hard vulcanized fibre trucks, in Hercules or Dreadnaught construction, are available in a wide range of standard or special models for a thousand-and-one jobs in varied fields across industry.

*Fibre Specialty
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everywhere!*



JUST OFF PRESS

New catalog No. 54 illustrates and describes in detail our wide range of equipment designed for handling materials the modern way in your plant. For your copy, write, 'phone or wire direct to Dept. 10.



A SNUG HOME FOR FINE ROVINGS . . .

They'll even hate to leave for the bigger things in their life. These safe, efficient Roving Cans are all hard vulcanized fibre seamless tube construction. Choice of metal or turned fibre top. Complete smoothness and freedom from snags, rough edges, holes, rivets, etc., recommend their use for safe materials handling in the textile field.

FIRST RIDE OUT OF THE OVEN . . .

Takes a lot of care, a little patience, and good equipment. That's where we come in! These new Bakerboy Bake Trays are completely modern, functional systems for handling bread flat at the bakery. Special design of open side or end permits ease of product visibility. When stacked, trays form an interlocking shelf system permitting easy movement of the entire unit from wrapping machine to loading platform, truck or storage.

Fibre Specialty Materials Handling Equipment

If you move products, or transfer materials, Fibre Specialty Division engineers can improve your plant efficiency, reduce damage to work-in-process as well as finished goods, and cut costs generally with modern materials handling equipment.

With an extensive line of standard equipment from which you can choose, plus experience and engineering skill in the design and building of special equipment built to your needs, Fibre Specialty Division is equipped to serve as your *materials handling specialists*.

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NATIONAL VULCANIZED FIBRE CO.

WILMINGTON 99, DELAWARE

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HOW TO APPLY AND USE

IBH*

*"In-Between Handling"

Short distance hydraulic manipulation of materials too heavy for manual handling yet not requiring high priced power-driven equipment.



More than 40

BIG JOE®

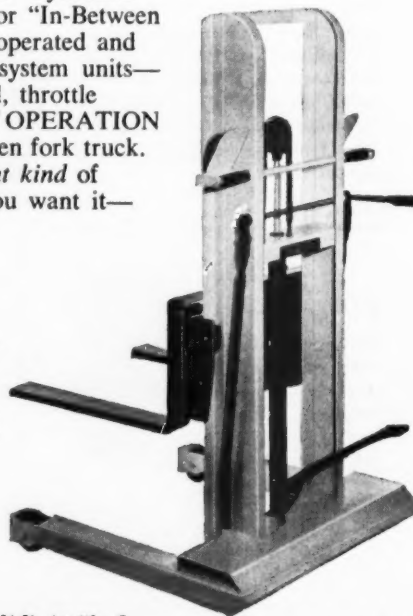
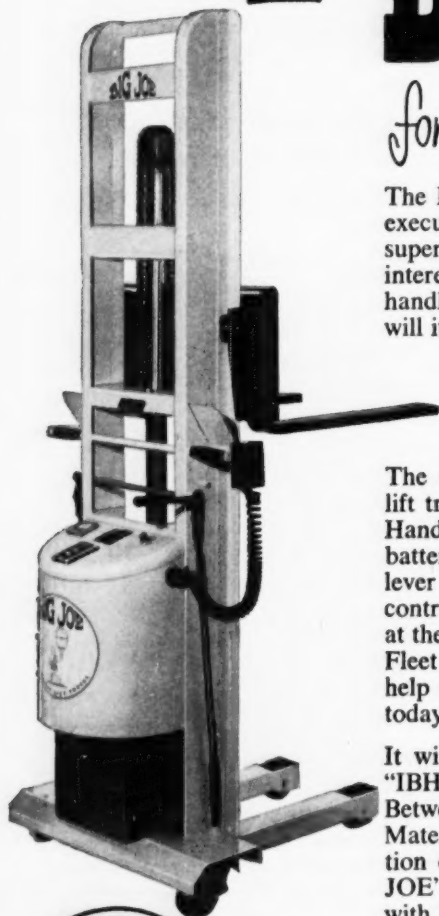
Models

for IN-BETWEEN HANDLING

The IBH* handbook has been especially written for plant executives, materials handling, plant and maintenance superintendents, methods engineers and for any individual interested in *improving* the efficiency of any materials handling system. How does IBH* fit in YOUR plant? What will it do for you? How much will it save in time, labor costs, capital investment, maintenance expense, etc? You can answer all of these questions for yourself with this new handbook which is available upon request.

The complete line of "BIG JOE" hydraulic lift trucks is designed expressly for "In-Between Handling" with a choice of foot operated and battery operated 6 and 12 volt system units—lever control, push-button control, throttle control. "BIG JOE" offers FLEET OPERATION at the price of a single power-driven fork truck. Fleet operation gives you the *right kind* of help where you want it, when you want it—today, tomorrow, every day.

It will pay you to write for "IBH*—The Economical In-Between System for Handling Materials"—and for full information on the revolutionary "BIG JOE" foot operated lift truck with TRIPLE ACTION PUMP!



"HYDRAULIC HANDLING FOR EVERY DEPARTMENT"

BIG JOE

MANUFACTURING COMPANY

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MATERIAL FLOW

AUGUST, 1954

Vol. 9, No. 11

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P&H OVERHEAD CRANES



At FORD... as everywhere...

P&H Magnetorque[®] (crane control)

has proved itself!

Wherever you see these words, "Magnetorque Control" they stand for the finest in overhead crane performance. And, that means *proved* performance! . . . Proved in over 900 installations! Developed and perfected by P&H, Magnetorque control has brought many outstanding advantages to crane users. First, it provides the finest speed regulation under all load conditions — with the convenience and economy of AC power — without harmful high motor currents. Second, it eliminates the mechanical load brake with all its costly service and replacement worries. Third, it assures

more faithful, uninterrupted service — for many years to come.

Like all other P&H crane electrical equipment, Magnetorque control is *built by P&H* — specifically for crane service — *not adapted for it*. That is one of the reasons why P&H cranes deliver coordinated performance in all functions. It also explains why P&H delivers the most complete crane service in the industry. Many leading American companies depend upon P&H for everything in connection with overhead cranes. You, too, will find that it pays!

P&H

A new fact-filled bulletin about P&H Magnetorque AC crane control is yours for the asking. Write for Bulletin C39-1.

P&H OVERHEAD CRANE DIVISION

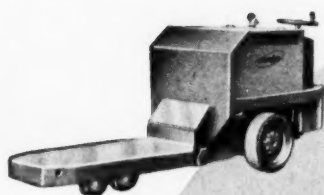
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MILWAUKEE 46, WISCONSIN

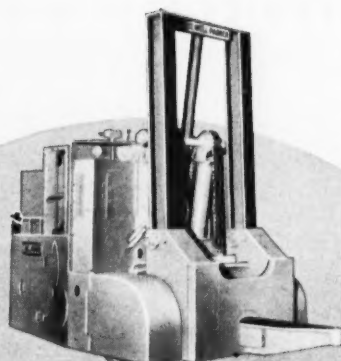


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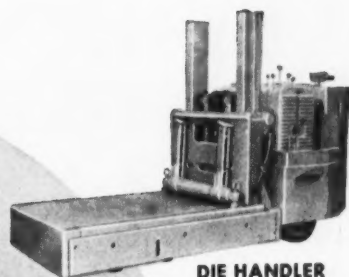
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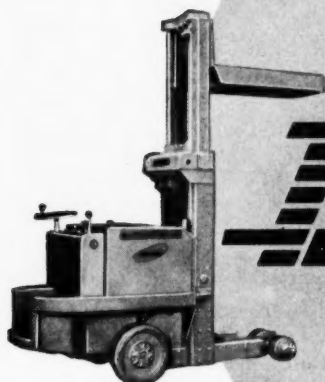
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RAM TRUCK



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HIGH LIFT TRUCKS

ELPAR



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LOW LIFT AND CRANE



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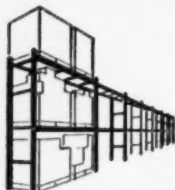


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YEAR AFTER YEAR

**AN EXCLUSIVE
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Send for Catalogue!



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AMERICAN METAL PRODUCTS CO.

STORAGE RACK DIVISION
5959 Linsdale • Detroit 4, Michigan

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**LETTERS
to the editors**

Army Wants Models

To FLOW:

This installation would appreciate receiving the names and addresses of any companies manufacturing scale models of forklifts, conveyors and commercial vehicles.

We wish to use these models in planning operations and training programs.

Any information you can furnish us will be greatly appreciated.
Thomas J. Cobb, Jr.
Storage Planner
Sierra Ordnance Depot

The names and addresses requested have been sent to Reader Cobb, and we feel sure the Army will make good use of any "models" received.

Safety Factor Still Stressed

To FLOW:

Your December issue which was devoted almost entirely to safety brought to my attention the fact that a splendid concentrated effort is being made to emphasize safety in materials handling. You are to be congratulated for your high sense of responsibility.

It seems to me that effective work in this field is being accomplished by means of the Trailmotor Safety Awards, the American Trucking Association National Truck Safety "Roadeo", and other similar nationally publicized events.

May I suggest that the same results may be obtained if some organization of Carriers, Shippers, Warehousemen, Traffic Managers, Equipment Manufacturers, etc. would sponsor a similar contest for the operators of materials handling vehicles? It would probably

FLOW • AUGUST, 1954



1 NEW MAGNETIC BELT UNIT

Any ferrous scrap or small parts can now be handled at inclines up to 72° with this new, low-cost Rapistan MP Magnetic Conveyor. Designed especially to operate in "tight spaces," the new unit features a highly magnetized bed which attracts any ferrous materials to center of belt, eliminating need for guard rails. Magnetic field ends at top, permits items to fall freely into tote box. Full details in Bulletin MP-54.



2 NEW LIVE ROLLER CONVEYOR

New Rapistan LR unit is a horizontal conveyor that moves materials economically, has unusual safety features, and solves belt wear problems. Unit allows sweep-off or accumulations of items. Has belt pressure adjustments at all points. Anything caught by rollers or belt can quickly be retrieved as entire roller assembly safely pops out. Wide selection of belt speeds and roller carrying widths. Details in Bulletin LR-54.

NEW! Three Rapistan® money-saving units

3

NEW, LOW-COST SEALED CASTER

Rapistan's new 5200 Series Cold-Forged Sealed Casters cost $\frac{1}{3}$ less than non-sealed casters, yet can be used in much wider range of applications. Dirt, acids, alkalis, brines and other chemicals are sealed out of the coin-hardened race-ways, lubricants are sealed in for longer life, fewer replacements under loads to 1200 lbs. Choice of metal, plastic or MB rubber wheels in all sizes. Ask for Bulletin 52-54 for specifications.



• Send for new field reports

telling how other Rapistan conveying equipment has solved handling problems similar to those facing you. Indicate your interest on the coupon and we'll send pertinent reports describing the problems, the solutions and the results. Also indicate desired bulletins regarding new products shown here.



The RAPIDS-STANDARD COMPANY, Inc.
169 Rapistan Building, Grand Rapids 2, Michigan

Please check your business classification:

☐ Manufacturing ☐ Agricultural ☐ Wholesale ☐ Retail
Check reports below which will be of greatest benefit to you:

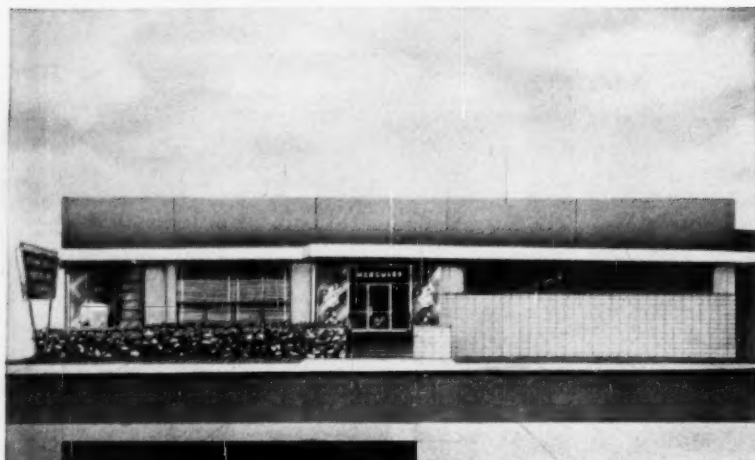
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| <input type="checkbox"/> Freight Terminals | | |

Bulletins: ☐ MP-54, ☐ LR-54, ☐ 52-54

Rapistan® BETTER CONVEYING EQUIPMENT

CONVEYORS, gravity and power belt • INDUSTRIAL CASTERS • WHEEL TRUCKS

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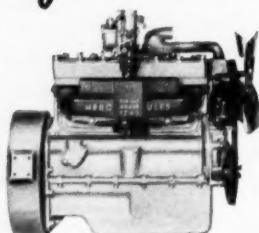


HERCULES

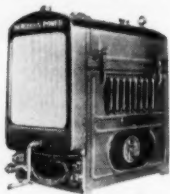
2336 South Garfield Avenue
Los Angeles, California

adds New service facilities

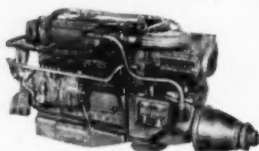
The increased demand for Hercules Engines and Power Units has resulted in a nationwide expansion of Hercules sales and service facilities. The above photograph is of the new Los Angeles branch which is the latest addition to the Hercules sales and service stores.



Facilities of this and other factory branches include: a salesroom, complete parts department, offices and a fully equipped machine shop for engine repair and rebuilding. In addition to the branches in the west and south-west, Hercules distributors throughout the country stand ready to provide immediate service in the following fields: automotive, agriculture, construction, industrial, marine and petroleum.



Hercules branches and distributors provide a dependable source for genuine Hercules parts as well as experienced personnel, to provide economical repair and service of Hercules engines and power units.



GASOLINE • GAS • DIESEL



INDUSTRIAL



MARINE



AUTOMOTIVE



AGRICULTURAL



OIL FIELD



CONSTRUCTION

We have over 300 parts depots, service outlets and branches ready to serve you. For the name and address of the Hercules outlet nearest you, write on your letterhead and ask for a copy of "The Hercules Distributor and Dealer List."



Engine Specialists since 1915

HERCULES MOTORS CORPORATION

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CANTON, OHIO, U. S. A.

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LETTERS

Continued

be practical to establish separate divisions for drivers from manufacturers, carriers and warehouses, and industry.

R. S. Alcott, Jr.

Engineer

Shipping & Warehousing Dept.
The Dow Chemical Company

Letters on safety are being continually received at the FLOW office. Let us hear your thoughts on a safety contest among operators of material handling vehicles. Reader Alcott's suggestion certainly seems worthy of further consideration.

Addressing by Stencil

To FLOW:

We have read with great interest the article on page 100 of the January issue of FLOW, concerning the typing of address stencils as a part of the invoice set.

If you have any further details on this idea, we would certainly welcome them. At zero pressure, our electric typewriters cut the stencil so severely that they cannot be used. Perhaps this is due to the number of parts in our invoice set, and the basic pressure setting of the machines. Our forms also are so designed that the maximum overall stencil width, (i.e. from top to bottom) we can use is 13/8". Do you know if such a size is available? Also, can you tell us the best method for attaching these stencils to the forms, preparatory to typing?

We think this whole idea constitutes a real contribution to intelligent work simplification, and would be very grateful for any further information you may be able to give us.

L. E. Paddock

Office Manager

Dewey and Almy Chemical Co.

We appreciate Reader Paddock's expressed interest in the article which appeared in our Packaging and Shipping section. His letter was one among many received along this same line, and we have supplied desired information.

FLOW • AUGUST, 1954

TRAMBEAM'S

special features* sure make it
the best buy for the money!

RIGHT- and it really helps to
have the WHITING distributor so
close at hand to engineer,
install and service it!



Friction Reducing Carrier Design has
Timken double row, tapered roller bearings

Underhung Carriers provide maximum
headroom, greater speed, improved control

Capacities to 15 TONS with full electrification

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fatigue, keeps stress vertical

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individually engineered by your Whiting Distributor to
meet your own specific handling requirements. For point to
point transport, he may recommend monorail. Or for fast,
flexible, complete area coverage, he might suggest a crane
system. In either case—or in *any* case—he will meet your
needs *individually, efficiently* and at *lowest cost*. To get all
the facts, arrange a meeting with your Whiting Distributor.
Phone him now or write for the complete Trambeam catalog!

WHITING CORPORATION, 15659 Lathrop Avenue, Harvey, Illinois



Your WHITING Distributor also handles—



WHITING ELECTRIC
CHAIN HOISTS



WHITING
"E" TYPE CRANES

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LESS PUSH MORE GLIDE

with
EASY-ROLLING

Colson CASTERS



Model 6-807-65 for extra heavy service. Made of heavy-duty steel—practically indestructible

• Now's the time to transform those balky old hand trucks into efficiently operating vehicles—quickly and inexpensively—by replacing worn out, obsolete casters with new COLSONs. There are over 1500 models from which to choose. COLSON also manufactures such cost-cutting handling equipment as Box Trucks, Drum Trucks, Platform Trucks, Hand Trucks, and Lift-Jack Systems—something for every materials-handling need.

Write us today or call the nearest COLSON office for the solution to your handling problems. (COLSON offices are listed in the yellow pages of your 'phone book under "Casters" or "Trucks, Industrial").



THE COLSON CORPORATION

Announces the purchase of the facilities of
SERVICE CASTER & TRUCK CORP.
of Albion, Michigan

The addition of the famous SERVICE line of heavy duty materials-handling equipment enables COLSON to offer American Industry a more complete line of materials-handling products than ever before possible.

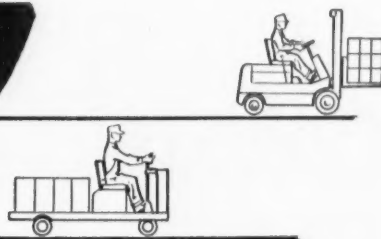
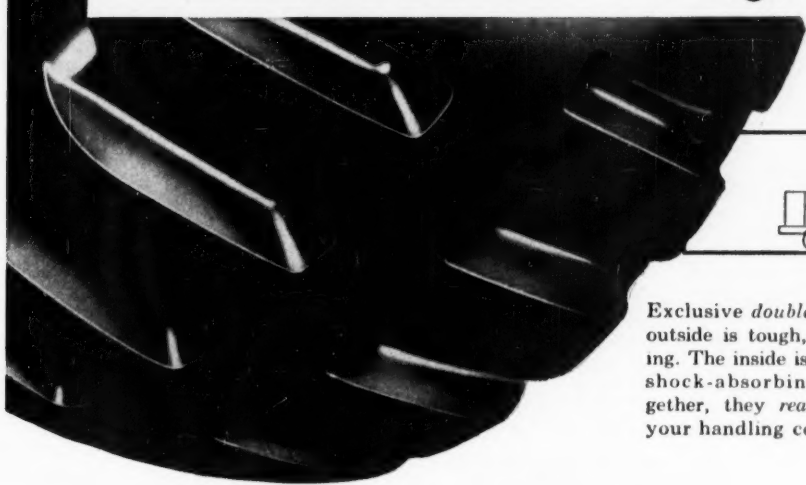
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ALBION, MICH.
CASTERS • LIFT-JACK SYSTEMS • INDUSTRIAL TRUCKS

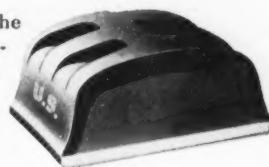
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U.S. ROYAL

INNACUSH — the original cushion solid



Exclusive double-tread! The outside is tough, cut-resisting. The inside is resilient, shock-absorbing. Together, they really cut your handling costs!



Rides Soft—Saves Big!

LOADS AREN'T SHAKEN



With the Innacush, your loads roll smooth and easy. Even small floor irregularities won't make them shift, break and waste your money.

TRUCKS AREN'T JOLTED



With the Innacush, your vehicles are cushioned and protected. You reduce truck maintenance and repair expense, especially to steering gear.

DRIVERS AREN'T FATIGUED



With the Innacush, your drivers aren't jounced and annoyed by shocks. Steering's easier. Morale's higher. More work is accomplished.

HERE'S PROOF YOU CAN SEE

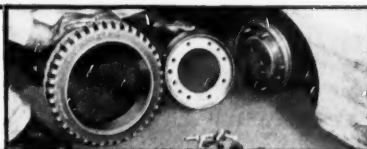


CONVENTIONAL SOLID—Watch the jagged white line, traced on film by a light on the truck's axle. It shows how a typical floor jars load—shakes truck and driver.

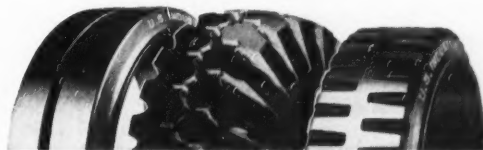


INNACUSH—But look at *this* white line. The truck and its course are identical, but now the bumps are evened out. Load, truck, driver are all guarded from vibration.

**Rapid Changing!
DEMOUNTABLE
INNACUSH**



Off with the old and on with the new in 10 minutes—without pressing charge, without costly down-time.



The most complete line of Industrial Tires is built by—U. S. Royal!



For more information, write Industrial Tire Department

UNITED STATES RUBBER COMPANY

1230 Avenue of the Americas, New York 20, N. Y.

Circle No. 131 on Reader Service Card for more information

IF YOU WORK WITH
FREE-FLOWING
SOLIDS AND POWDERS

You'll Want to Know More About

ROBO-LIFT ELEVATING CONVEYORS



Standard Model
A-670

With a Robo-Lift, it's easier to keep pace with high production schedules. Handling time and damage are cut to the bone, and costs, too! That's because Robo-Lift assures the gentle, sanitary movement of material and finished products—with a minimum of time and attention.

Write today for complete information. A Counsel representative will be glad to give your inquiry his personal attention.

Counsel
MACHINE COMPANY, INC.
8 Hathaway Street, Wallington, N. J.

Circle No. 43 on Reader Service Card

MEN in the news

... at General Electric Co.

Ernest E. George has been named manager of magnetic products engineering, Carbology Department. He joined the company in 1933 as a test engineer. In 1946 he became a magnet engineer for the chemical department of the metallurgy division, and was named manager of magnetic materials, Carbology Department in 1950.

... at Bassick Company



Michael Kramcsak, Jr. was named chief of engineering. He has contributed considerably to the design and development of new and improved products in the company's lines, since joining them in 1934. In his new capacity, Kramcsak will be directly responsible for the supervision of all engineering and development work on all products manufactured by the company.

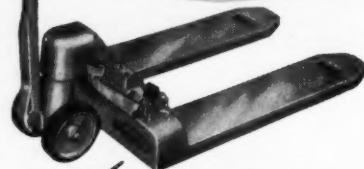
... at International Paper Co.

Board chairman, John H. Hinman, announced several changes in top management. F. Henry Savage, a 30 year man, is vice president and general sales manager. Joseph P. Monge, vice president and treasurer of the company's Canadian subsidiary, has been elected treasurer of the parent company. Stuart E. Kay, vice president, has been assigned the additional responsibility of directing the company's labor

FREES POWER TRUCKS FOR TIERING!



RAYMOND



Lightweight HAND PALLET TRUCK

● Why tie up power trucks on jobs that can be handled by a RAYMOND Lightweight Hand Pallet Truck! Use this 2,000 lb. capacity truck for all your short hauls ... and to ease rush hour handling.

● The RAYMOND Lightweight is the sturdiest hand pallet truck on the market! Its one-piece welded forks have 1/3 more strength than bolted forks found on "similar" trucks. Ram pistons, axles and lever shafts are made of heat-treated alloy steel. Pump piston is heavily chrome-plated to prolong pump life and prevent leakage.

● This truck is highly maneuverable in cramped areas due to its light weight and 270° steering arc. It offers effortless pallet entry, foot-pedal operation ... has rugged reinforced handle and dual-purpose brake.

● SEND FOR CATALOG See the complete line of RAYMOND Hand Pallet Trucks before you buy additional equipment. Mail coupon for new catalog today.

The RAYMOND CORPORATION
3332 Madison St., Greene, N.Y.

Please send me your new Hydraulic Equipment Catalog.

NAME _____ TITLE _____
COMPANY _____
STREET _____
CITY _____ STATE _____

Circle No. 113 on Reader Service Card
FLOW • AUGUST, 1954

and employee relations. **Olaf N. Rye** has been appointed general traffic manager, succeeding the late **Hugo Ignatius**, who died suddenly on April 29.

. . . . at **Vickers Incorporated**

The appointment of **Philip H. Emrich** as manager of the Joplin, Missouri manufacturing plant is announced. In his new capacity, Emrich will direct all activities of the plant. He joined the firm in 1936, and served in various capacities before his latest appointment.

Gregory M. McKeown succeeds Emrich as head of the Product Service Department. His assistant is **George C. Bonnell**.

. . . . at **TelAutograph Corp.**

New executive vice president in charge of all operations of the corporation is **Roy J. Keller**. He also holds the position of secretary and acts as security officer. During his 30 years of service with the company, Keller has been service representative, St. Louis and Chicago branch manager, Midwestern division manager, and general sales manager.

. . . . at **American Box Company**.

George H. Kubes was re-elected president and a director of the Cleveland firm, and also a director of its subsidiary, American Wood Products Corporation. Other members of the firms' board of directors include: **Henry S. Kubes**, vice president; **John P. Kubes**, secretary; **R. L. Finan**, treasurer; **Mark L. McCave**, **J. H. Sibbison**, and **W. A. Eger**.

. . . . at **Colson Corporation**

New general manager of the Albion, Michigan and Somerville, Massachusetts plants is **L. L. Reed**. The plants were formerly owned by Service

SAVED

SIX FEET in EVERY AISLE

with



Electric TIERING TRUCK



MODEL E2ST • Cap. 2,000 lbs. Also available in 3,000 lb. cap. model.

ANOTHER LARGE WAREHOUSE actually halved its aisle space with a RAYMOND Tiering Truck! Aisles 12-ft. wide were reduced to 6-ft. Result: more useable storage space.

NOW YOU CAN make comparable space savings in your own plant or warehouse with a RAYMOND Tiering Truck. Because this truck actually right-angle tiers 4-ft. pallet loads from aisles only 6-ft. wide. Think what this means in increased storage capacity without enlarging your present facilities!

RAYMOND TIERING TRUCK . . . operates in narrow aisles due to its short length and patented* off-set drive wheel with 200° turning arc. The truck's lightweight permits use on low-capacity elevators, floors. 51" free lift enables loads to be stacked in low-ceiling areas, truck trailers, boxcars without increasing overall height. Truck is equipped with new power unit that opens up like a book for fast, easy servicing.

The RAYMOND CORPORATION

3338 Madison St., Greene, N.Y.

**GET
FULL
DETAILS!**

- () Please send Bulletin 830 describing 2,000 lb. cap. Tiering Truck.
- () Please have your representative call.

NAME _____ TITLE _____


COMPANY _____

STREET _____

CITY _____ STATE _____

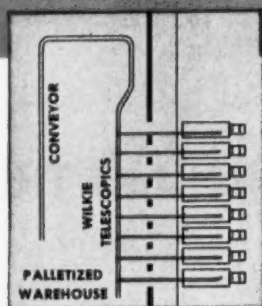
* PATENT NO. 2,564,002

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EIGHT WILKIE TELESCOPIC CONVEYORS*
MAKE TRUCK LOADING EASIER...
SAFER...CHEAPER...

at Lily-Tulip Cup Corp.



Considerable labor is saved and loading time is reduced at Lily-Tulip Cup Corp. because cartons are loaded into trucks on Wilkie Telescopic Conveyors. Standard conveyor sections, with their attendant bothersome set up, are eliminated.

Wilkie Telescopic Conveyors, located in each of eight truck loading bays, are wheeled easily into place so that cartons are carried all the way to the front of truck or trailer. As the space is filled, the conveyor is shortened to the next stacking position. Cartons are always conveyor carried, handling time is reduced to a minimum.

Like hundreds of other companies, Lily-Tulip Cup Corp. finds this system of truck loading extremely profitable.

Low first cost and low upkeep plus all of the advantages of the Wilkie Telescopic Conveyor add up to important savings.

*Mfg. under Pats.
 Nos. 2613788-89

The Wilkie Telescopic Conveyor can be incorporated into any shipping system. Find out how this easy-to-handle, extremely efficient conveyor can reduce your truck loading time.

Write today for additional information to Wilkie Company, 5520 Arch St., Phila. 39, Pa.



TELESCOPIC CONVEYORS

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MEN IN THE NEWS

Continued

Caster & Truck Corporation, assets of which recently were acquired by Colson. Reed had been affiliated with Service since 1936, and was a vice president at the time of the sale of the assets to Colson. An M.E. graduate from Northeastern University, he did graduate work at Massachusetts Institute of Technology.

... at Stewart-Warner Corp.

Election of **Bennett Archambault** as president and as a director was announced by **James S. Knowlson**, chairman of the board. Archambault has been vice president and general manager of the M. W. Kellogg Company, is a graduate of Massachusetts Institute of Technology, and previously attended Georgia Tech.



B. Archambault

... Caterpillar Tractor Co.

Louis B. Neumiller was elected chairman of the board and **Harmon S. Eberhard** elected president at a recent board meeting. **Harry H. Fair**, who resigned the board chairmanship, will continue as a director, as will **B. C. Heacock**. Other incumbent corporate officers were re-elected.

... at Lamson Corporation

New field engineer of the Commercial Division is **J. M. Ilacqua**. In this position, Ilacqua will be responsible for the sale of airtubes, paper handling conveyors and blowers for all of upper New York State east of Rochester. **Albro E. Hill** will replace Ilacqua in the Buffalo area as field engineer.

FLOW • AUGUST, 1954

LATEST MEMBER OF A PROVEN TRUCK LINE

NEW YALE WAREHOUSER



Does big lifting jobs in small space

Here's a low-cost fork lift truck that really fills the bill when it comes to high speed handling in 5' or 6' aisles ... has all the advantages that have made earlier Warehousers famous: unusual power and durability, small size and light weight, one hand operation with dead man control and many other new features.

Like all YALE Trucks and attachments, YALE Warehousers are built to exacting standards of quality and performance. For information about any cost-cutting YALE Truck call your local YALE representative...or mail the coupon.

YALE*

INDUSTRIAL LIFT TRUCKS AND HOISTS

*Reg. U. S. Pat. Off.

The YALE & TOWNE Mfg. Co., Dept. 48
Roosevelt Blvd., Philadelphia 15, Penna.

Yes, please send me full details on the Warehouser line.

Company _____

Name _____ Title _____

Street _____ City _____ State _____

In Canada write: The Yale & Towne Manufacturing Co.,
St. Catharines, Ontario, Canada

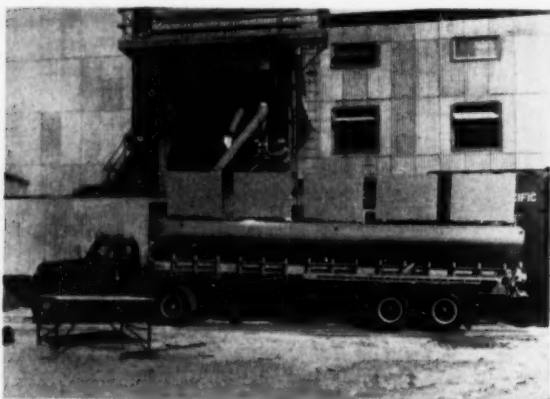
Gas, Electric, Diesel & LP-Gas Industrial Trucks • Worksavers • Hand Trucks • Hand & Electric Hoists • Pul-Lifts

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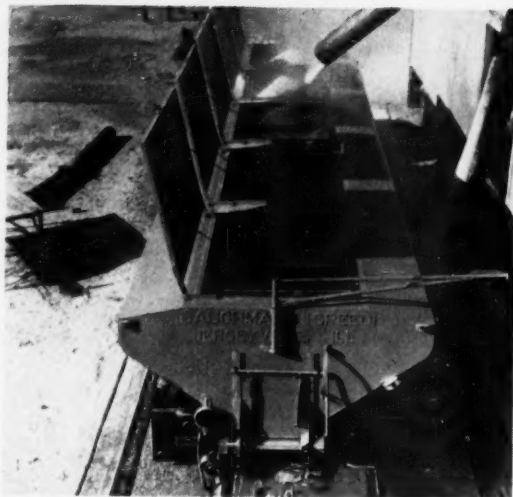
NEW BAUGHMAN TRANSPORT CARRIES 33,000-LB. LOAD OF SALT ...UNLOADS IN 30 MINUTES!

GRAND SALINE, TEXAS — The Transport Body pictured on this page is helping to make appreciable cuts in labor and handling costs, with corresponding savings in time, for the Anderson Truck Company, contract hauler for the Morton Salt Co. Operations take the company throughout the state of Texas. The body is the new Baughman Bulk Transport K-8-T, manufactured by the Baughman Mfg. Co. of Jerseyville, Ill.

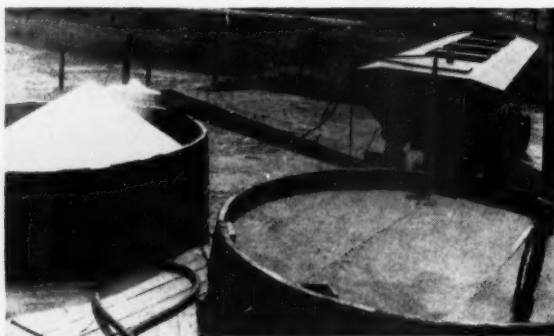
Anderson reports that customer response has been very favorable — many clients actually request deliveries in the time-saving K-8-T. Anderson's own view on this Baughman equipment is clearly evidenced in the fact that this is the company's third such unit ordered in the past year.



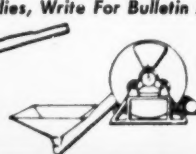
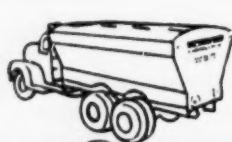
DOES WORK OF BOXCAR — 4 TIMES FASTER! By delivering 33,000 pounds of salt in each load, and by automatic screw conveyor unloading in 30 to 40 minutes (as compared to the 6 to 8 hours required to unload a 100,000-pound boxcar), this handler is cutting an average of four hours from his handling time.



BAUGHMAN BULK TRANSPORT CUTS HANDLING COSTS. In the salt business, freight represents the highest single cost factor. This Baughman unit is helping to speed up handling time, while lowering labor and handling costs. The K-8-T is equally efficient in the hauling of flour, grain, phosphate, fertilizers, and similar materials.



SAVES UP TO 75% ON LABOR! This new streamlined operation requires only the attention of the driver. The Baughman Transport loads directly into bins, with openings often 18-feet above ground. Compared with boxcar handling, the K-8-T accomplishes the same volume of work with a saving up to 75% in time, and therefore 75% in labor.

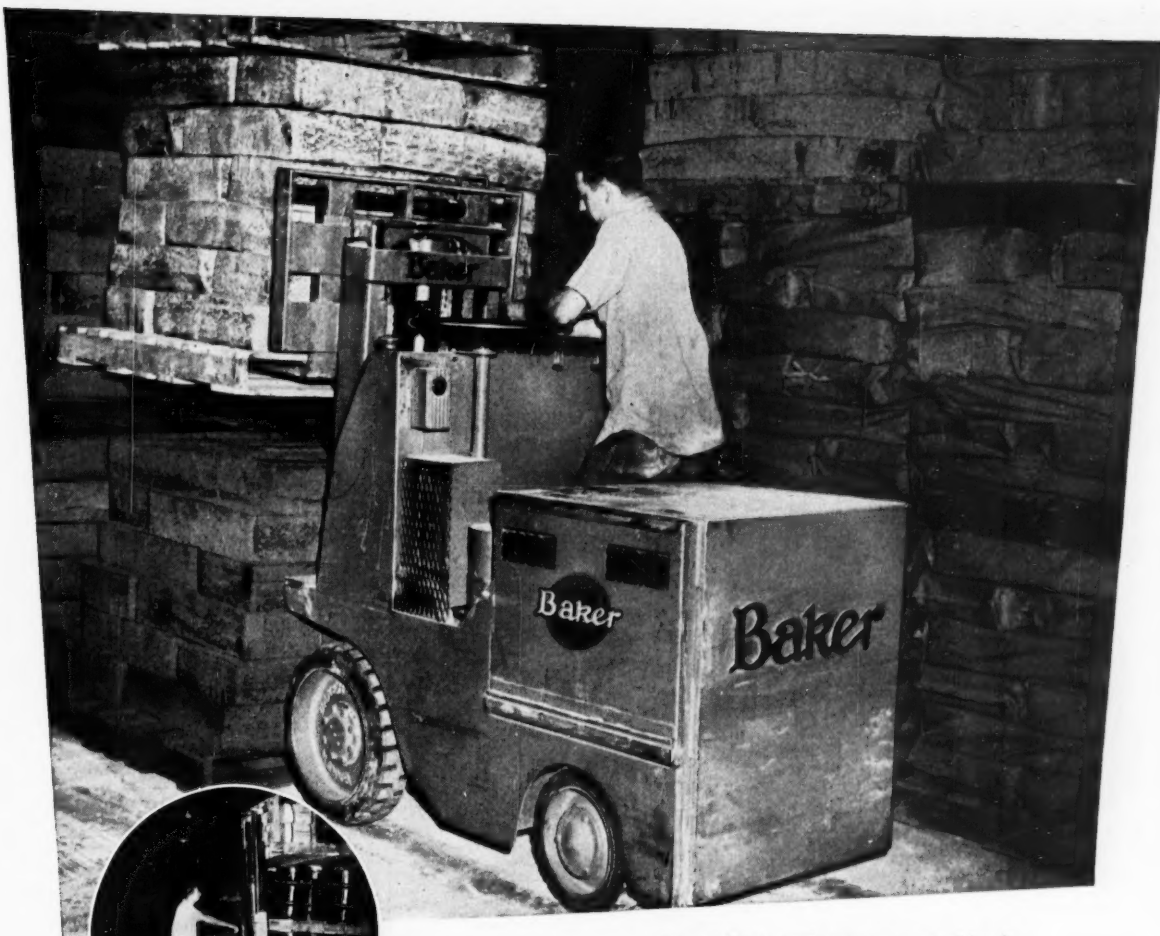


BAUGHMAN MANUFACTURING COMPANY

106 Arch Street

Jerseyville, Ill.

Circle No. 21 on Reader Service Card for more information



ACUSHNET gains production man-hours while decreasing payroll!

○ Acushnet Process Company of New Bedford, Massachusetts, manufacturers of the well-known "Titleist" Golf Ball and supplier of precision-molded rubber parts to all of industry, has increased the productive efficiency of its labor force by mechanized handling with fork lift trucks thus eliminating backbreaking manual handling.

Last year the company purchased a Baker 4,000 pound fork truck for its receiving department. The truck's ability to enter a trailer and handle material on pallets was one of the factors in cutting freight handling costs in half. Time for unloading a typical 3,000 pound highway truck load of raw materials was reduced from 4 to 1¼ hours. The dependability of the Baker battery-powered truck, with practically no down-time and very little maintenance was another decided improvement

over the gas fork truck formerly on this job. Additional advantages are quietness of operation and greater speed in handling and maneuvering.

Acushnet handles each month about a million pounds of raw materials such as baled crude rubber, synthetic rubber blocks, and drum-loads of raw ingredients. All are now handled on pallets with fork trucks.

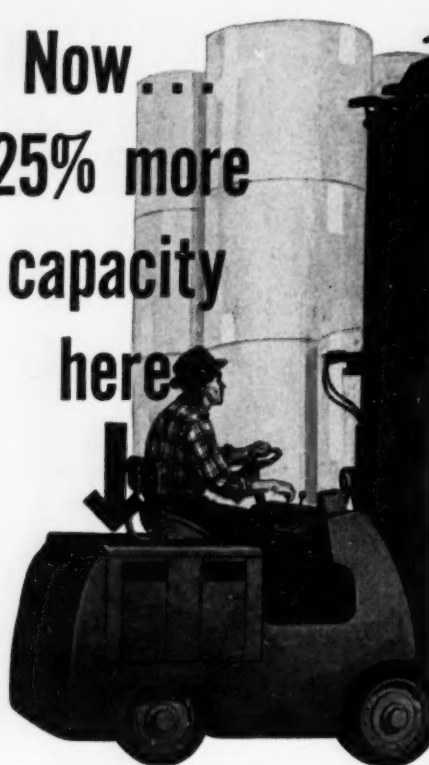
Write for your free copy of the "Baker Handling Library", a portfolio of case histories showing actual cost savings in a wide variety of plants. The Baker Raulang Company, 1219 West 80th St., Cleveland 2, Ohio.

Baker.
industrial trucks

Circle No. 18 on Reader Service Card for more information

news for industrial truck owners!

Now ...
25% more
capacity
here



...with the New EDISON
"MC" type Battery!

Specifically designed to provide more power for modern driver-ride, sit-down fork trucks, this newest EDISON battery development provides 25% more capacity than ever before available in nickel-iron-alkaline batteries ... to suit the limited battery compartments of such industrial trucks. Extra power too, for operating various hydraulic devices which speed handling in plants and warehouses.

Besides this unusual space-capacity ratio, the new "MC" offers all

the profitable features typical of EDISON Nickel-Iron-Alkaline Storage Batteries: steel plates and cell containers for rugged, long-life service—electrical characteristics that assure foolproof operation, and outstanding dependability.

And like all EDISON batteries, the new "MC" is designed and built to give more than twice the performance life of other type batteries. Be sure to investigate this new EDISON development today!

Most dependable power...
lowest over-all cost
you get both with an EDISON



EDISON
Nickel • Iron • Alkaline
STORAGE BATTERIES

EDISON ALSO MAKES THE FAMOUS "V.P." VOICewriter AND THE TELEVOICE SYSTEM
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news from the
SALES FIELD

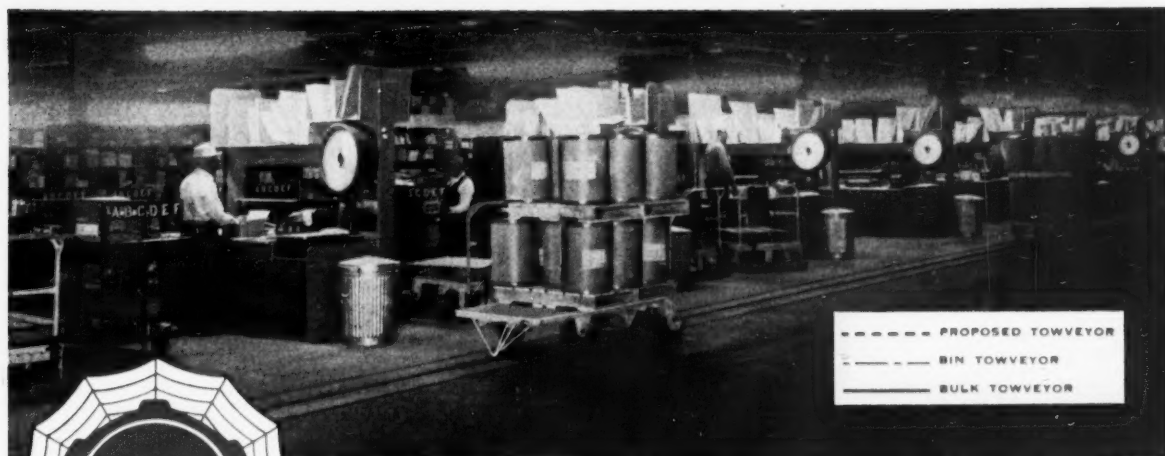
Floyd M. Mayse has been appointed southeastern district manager of Lamson Mobilift Corporation, with headquarters in Atlanta, Georgia. He was formerly southwestern district manager for the company. In his new position, he will coordinate all sales and service efforts in the southeastern United States, and act as liaison in the Atlanta area between Lamson Mobilift and Lamson Corporation.



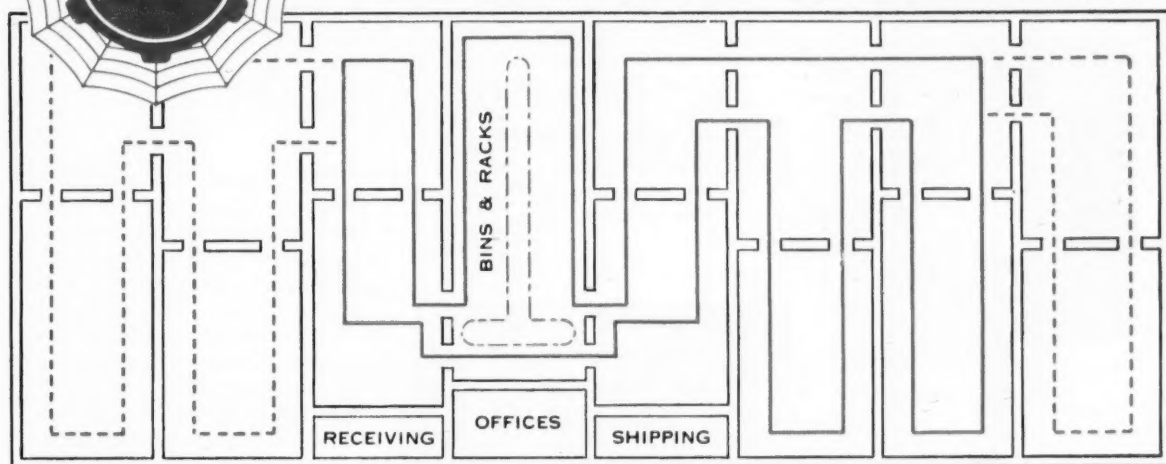
Engineered Industrial Equipment Company, Buffalo, New York, is the new distributor in the area for American Mono-Rail Company. J. Robert Fisgus heads the company, which was founded in 1953.

George J. Koeck, Jr is the new district sales representative for Zenith Radio Corporation in the Midwest. He has been associated with the firm in New York since January 1946, and during the past several years has served as executive assistant to W. W. Boyne, vice president of Zenith New York.

The appointment of W. H. Pender as manager, Belting Sales, Quaker Rubber Corporation, Division of H. K. Porter Company, Inc. was announced. Pender has 20 years of experience in the rubber industry,



TOWVEYORS SERVE....



GENERAL SERVICES WAREHOUSE

Two Webb Towveyors serve the 1,000,000 square feet of floor space in the new General Services Warehouse at Franconia, Virginia. This warehouse handles 20,000 catalog items, and a normal volume amounting to \$1,000,000.00 each month.

One Towveyor covering the bulk area is 8,156 feet long and the other located in the bin area is 1,110 feet long. The larger Towveyor has four drives, and a check by the power company shows a daily operating cost of 60 cents per drive.

In addition to catalog items, special orders for various

Government Departments are also handled for in-and-out, or short storage only. The 600 Towveyor trucks employed come in very handy for this purpose and for short term storage of bulk items which are left on the trucks for reshipment without being floored.

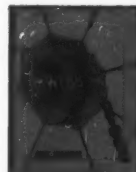
The entire warehouse operation is so smooth running that visitors might at times get the feeling of little activity, but the tonnage figures and number of items handled daily erases this impression. A Webb Towveyor can smooth-out your material handling problems too—call your local Webb engineer for further information.

JERVIS B. WEBB CO.

Conveyor Engineers and Manufacturers

8935 ALPINE AVENUE • DETROIT 4, MICHIGAN

Send for fully illustrated catalog that provides complete information on Webb floor type conveyors.

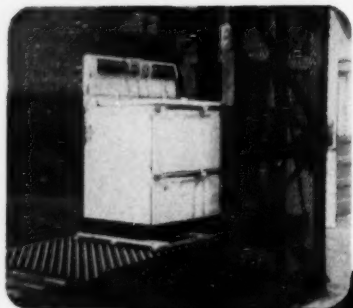
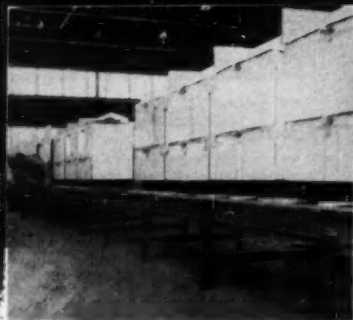


FACTORIES: DETROIT • LOS ANGELES • HAMILTON, ONTARIO
OFFICES AND REPRESENTATIVES THROUGHOUT THE WORLD

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ALVEY engineered CONVEYORS

SPEED PACKING



Every time you MAN-handle a package, you add to the cost and nothing to the value; therefore, it will pay you to put your packages on Alvey Conveyors that are engineered to your requirements.



In the shipping department, electric ranges are dressed for travel—moving smoothly and surely on Alvey Conveyors.

This, the final step before shipment, continues throughout the shift, like clockwork. The Alvey Conveyors are coordinated with production operations. Thanks to creative conveyor engineering, stove transportation is job-timed ... work-flow is uninterrupted.

An Alvey Engineer is ready to visit your plant ... to explain the advantages of an engineered conveyor system in your production operations.

BRANCH OFFICES IN PRINCIPAL CITIES

ALVEY

ALVEY CONVEYOR MANUFACTURING COMPANY

ALV-149

9299 Olive Street Road • St. Louis 24, Missouri

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SALES FIELD

Continued

concentrated primarily in the manufacture and sale of belting. In his new position he will coordinate the activities of factory and field personnel in all phases of belting sales.

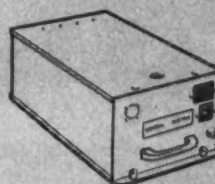
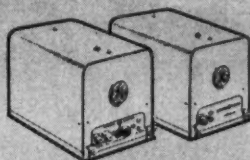
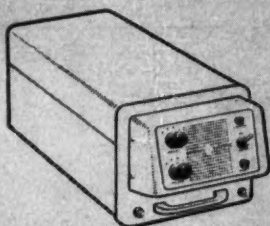
Cleveland Tramrail Toledo Company, Toledo, Ohio, has been appointed a distributor for Arrow Products, Inc. This 30 year distributor has expanded its facilities to cover the complete material handling field, including service to customers in the Northwestern Ohio area.

The General Electric Company has announced the appointment of R. G. Clark as district sales manager for communication products in south central Texas, with offices at 335 New Moore Building, San Antonio, Texas. Since joining the company in 1952, Clark has served as communications specialist with the New Orleans office.

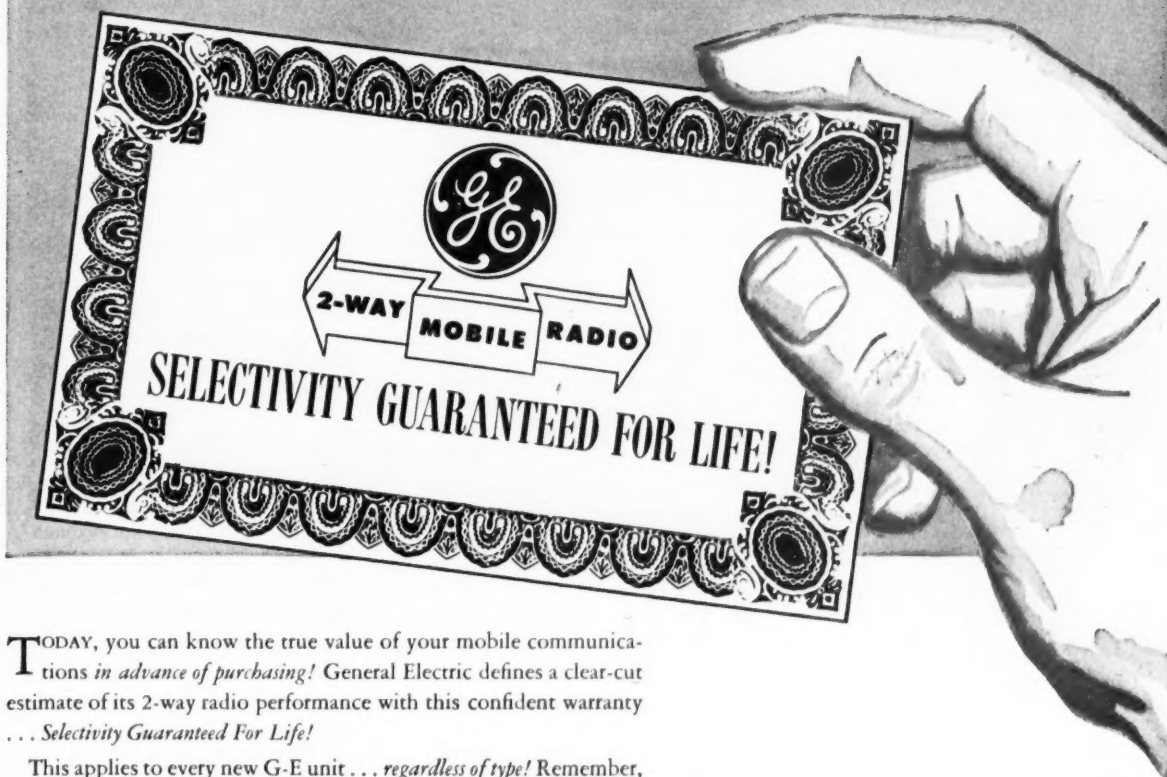
Baldwin-Lima-Hamilton Corporation announces the appointment of Robert T. McClellan as sales representative for the Standard Steel Works Division at Burnham, Pa. He will serve the Central Pennsylvania territory.

Factory Trucking Equipment Company, 2224 Olive Street, St. Louis, Missouri, is the exclusive distributor in the area of the complete line of equipment manufactured by Albion Industries, Inc.

R. C. Neiswander, sales manager of The Hertner Electric Company, announced the appointment of sales representa-



Buy any new G-E 2-way radio... **GET G-E's** **"GUARANTEE POLICY"**



TODAY, you can know the true value of your mobile communications *in advance of purchasing!* General Electric defines a clear-cut estimate of its 2-way radio performance with this confident warranty... *Selectivity Guaranteed For Life!*

This applies to every new G-E unit... *regardless of type!* Remember, the services you perform deserve nothing less than this warranty. Insist on it! Before you buy—compare G-E 2-way radio features... compare G-E performance with any other make in the industry. You'll make the wise decision—in favor of G-E! Get the G-E story first by calling our local district representative or writing: *Section X3284, General Electric Company, Electronics Park, Syracuse, New York.*

PROGRESS IS OUR MOST IMPORTANT PRODUCT

GENERAL ELECTRIC

Circle No. 63 on Reader Service Card for more information

General Electric Company, Section X3284
Electronics Park, Syracuse, New York.

I want to know more about General Electric's *new*
GUARANTEE!

NAME

COMPANY

ADDRESS

CITY STATE



MAKE THIS Simple TEST!

1 Take a healthy swat at a new golf ball with a driving iron. Although golf balls are engineered to take this kind of punishment, 9 times out of 10 you'll find you have dented or cut the ball.

2 Now, try the same swing with a woven cotton PRACTICE BALL. Naturally, this close woven cotton ball ABSORBS thousands of impacts and practically NEVER wears out. Now read how the same thing happens with Buffalo Conveyor Belts.

...and you'll always buy solid woven COTTON BUFFALO *Conveyor* BELTS

MADE OF SOLID WOVEN COTTON, Buffalo Belts are the belts with the "built-in bounce" created by our exclusive Wov-In-Wear process. These extra pliable belts have the "give and take" weave that refuses to fight obstacles such as bumps or misalignments in your conveyor line. They just mold themselves around or over these abrasive wear points and keep on going. By the same token, they bounce off the *impacts* of everyday wear for years of extra service. Lower first costs and upkeep, lighter in weight to put less strain on motors, clean, odorless and adaptable to most any conveying job, these economical belts are fast replacing costlier, plied-up belts for a *fraction* of the cost. It will pay you to get the facts, NOW!

IN ADDITION TO REGULAR WOVEN BELT, BUFFALO OFFERS 6 SPECIAL TREATMENTS TO HANDLE PARTICULAR PROBLEMS, FOR INSTANCE:

OIL

Buffalo's regular cotton belt is thoroughly impregnated with ASPHALTUM to make it impervious to oil and moisture. If you convey hand tools, small machined parts or any oily or wet object, this is the belt for you.

OVER
200 SIZES
35 WIDTHS
7 THICKNESSES

FREE

14 PAGE GUIDE TO

Buying the Right Conveyor Belt for your Particular Job. Illustrated Uses, Maintenance Tips, Sizes, Prices.



BUFFALO

WEAVING & BELTING COMPANY

209 CHANDLER STREET

BUFFALO 7, NEW YORK

NEW YORK PHILADELPHIA CHICAGO DETROIT LOS ANGELES

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SALES FIELD

Continued

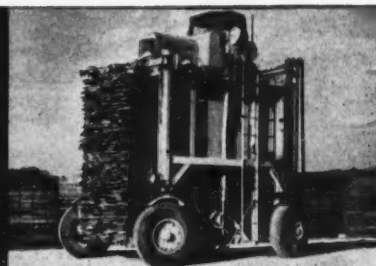
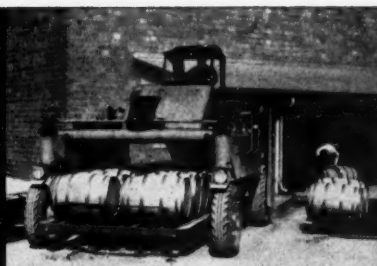
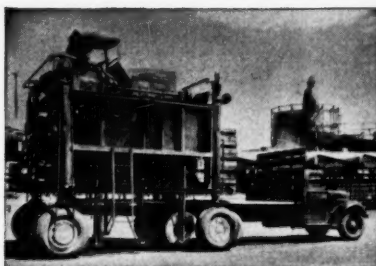
tives in three areas. They are: Robert F. Lamb, 1807 Elmwood Avenue, Buffalo, New York; Robert D. Briggs, 7446 Vine Street, Cincinnati, Ohio; and William B. Pearce, 450 Stuart Street, Boston, Massachusetts.

The Union Metal Manufacturing Company has named Insley-McEntee Equipment Company of Rochester, New York, as exclusive material handling agents in ten North-western New York counties. The Rochester firm is headed by Eric B. Insley and James N. McEntee.

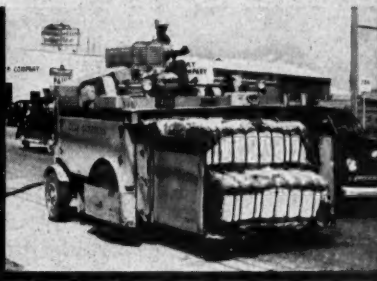
Edward Lebo, public relations director of Hewitt-Robins, Inc. has been given the additional responsibility of advertising manager, and will direct the company's entire advertising and public relations programs.

Don W. Kelsey Company, distributors for Union Steel Products Company, announces the opening of new and larger offices at 16629 Meyers Road, Detroit, Michigan.

In a move to round out the experience of top sales personnel, John Graham, general manager of sales of American Steel & Wire Division of United States Steel Corporation, announced an exchange of managers between the New York district sales office and the Chicago district sales office. Coming to the Chicago district sales office as manager is William W. Deal, who is filling the position vacated by Fred L. Nonnenmacher, who goes to New York to take Deal's post as district manager of sales.



One man loads it . . . in 3 seconds, up to 50,000 lbs. . . .



*One man drives it . . .
speeds up to 56 mph*

*One man unloads it . . .
in 3 seconds*

You are invited to a free showing of **"Over-the-Load Materials Handling"**

a 25-minute sound movie starring the **ROSS CARRIER**

You can revolutionize your handling operations! You can move materials faster, farther, at less cost, and this new movie shows you how to do it. As in the above pictures from the film, you'll see the Ross Carrier handling pineapples, whiskey barrels, lumber packages, heat exchangers, cotton bales, steel tube—for aggressive, cost-conscious companies which have discovered the unique advantages of over-the-load handling. If you are sincerely interested in knowing what's new in materials handling, you won't miss this free movie. It's available on a loan basis—simply send the coupon to reserve your showing. We'll mail the film to you—your only cost is return postage.

Circle No. 36 on Reader Service Card for more information

**CLARK
EQUIPMENT**

ROSS CARRIER DIVISION
CLARK EQUIPMENT
COMPANY
Benton Harbor 13, Mich.

Send "Over-the-Load" movie for showing on
(give 2 choices):

Dates 1) _____ 2) _____

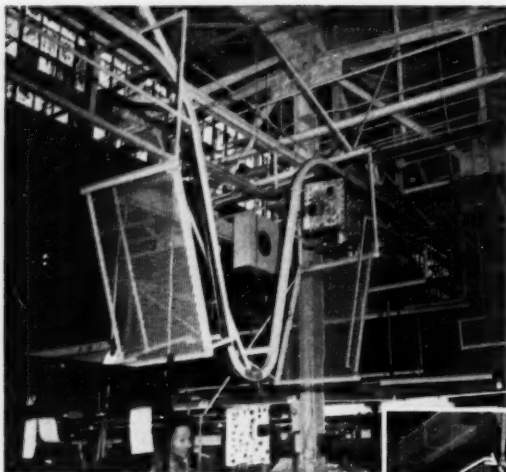
Name _____

Firm _____

Address _____

City _____

...a T-V set is born



• "Bare Chassis" conveyor in RCA plant is over 1,000 feet long. Here ZIG-ZAG is used for both production-flow and moving storage of television receiver chassis.

• "Record Conveyor," 1,800 feet long, is inverted type. ZIG-ZAG operates upside down in 10-inch deep trough, pushing boxes of finished records to packing department and warehouse.



with the help of

"Zig-Zag"®

Continuous Power Conveyors

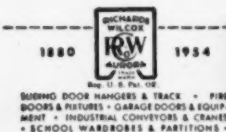
The Radio Corporation of America's plant at Indianapolis, Indiana, turns out hundreds of television receivers every day. Even the slightest hitch in production-flow can seriously hamper vital deliveries to dealers.

To expedite handling, RCA installed several Richards-Wilcox ZIG-ZAG Continuous Power Conveyors to keep things moving smoothly, both on production lines and in transport between divisions. They help boost TV and phonograph record production by eliminating production bottlenecks.

RCA chose ZIG-ZAG for the same reasons so many other manufacturers have done so—because it's quality designed and manufactured for years of low-cost, trouble free service. Because of its flexibil-

ity, operating continuously "up, down, in, out and around" anywhere overhead, releasing valuable floor space and personnel for other jobs. And because when changing conditions make alterations necessary, ZIG-ZAG Conveyors can be relocated by plant personnel, usually without loss of a single part.

Whatever your problems in materials handling, R-W ZIG-ZAG Conveyors can help you solve them. With carrying pendants located on 6-inch centers, ZIG-ZAG is designed to handle any load a man can lift in continuous production. A choice of drive units permits travel at any required speed with variations of 10 to 1 or better. For complete details on R-W ZIG-ZAG Conveyors, write us or consult an R-W Engineer, at no obligation.



Richards-Wilcox Mfg. Co.

MATERIALS HANDLING DIVISION
Branches in Principal Cities

420 THIRD STREET, AURORA, ILLINOIS

Circle No. 114 on Reader Service Card for more information

Calendar of Events

August 17-19

5th Western Packaging & Material Handling Exposition,
San Francisco, California

September, 1954

Packaging Association of Canada,
Competition and Workshop Seminar,
Toronto, Canada

September 22-24

Material Handling Institute Fall Meeting,
Skytop Lodge,
Skytop, Pennsylvania

September 27—October 8

Institute for Packaging Personnel,
Purdue University,
West Lafayette, Indiana

September 28-30

9th Annual Industrial Packaging & Material Handling Exposition,
Competition & Short Course,
Coliseum,
Chicago, Illinois

October 16-19

Conveyor Equipment Mfgs. Asso. Meeting,
Greenbrier Hotel,
White Sulphur Springs, W. Va.

October 18-22

42nd National Safety Congress & Exposition,
Chicago, Illinois

October 21-22

Caster & Floor Truck Mfgs. Asso. Meeting,
Cleveland, Ohio

November 1-5

National Metal Show,
International Amphitheater,
Chicago, Illinois

November 9-11

3rd Canadian National Packaging Exposition,
CNE Automotive Building,
Toronto, Canada

November 10-12

18th Annual Time & Motion Study & Management Clinic,
Sherman Hotel,
Chicago, Illinois

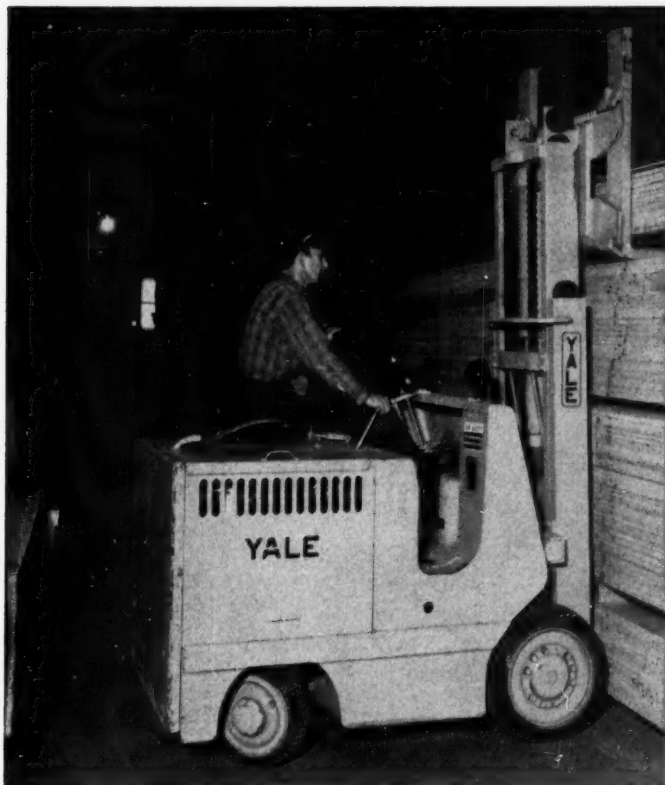
November 15-17

10th Annual Meeting,
The Magnesium Association,
Hotel Chase,
St. Louis, Missouri

FLOW • AUGUST, 1954

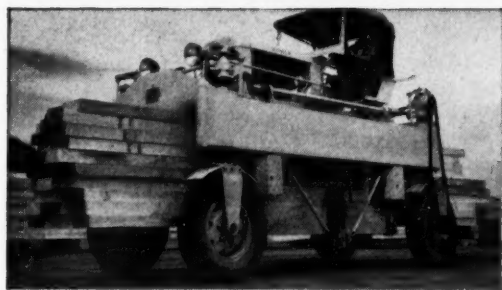
B.F. Goodrich

FREE TIRE AND WHEEL ANALYSIS can solve
your tire problems, reduce costs **20-50%**



The B. F. Goodrich Tire and Wheel Analysis Plan has reduced industrial tire costs 20 to 50% for hundreds of users across the country. It has solved seemingly hopeless cases of abnormal tread wear and premature failures. The B. F. Goodrich TW Analysis can help you cut your tire costs. Contact your local BFG retailer or mail the coupon below. Without cost or obligation a trained B. F. Goodrich man will study your materials handling operations.

The TW man will tell you what type and size tires, what tread design and compound will serve you best. He will recommend ways to improve your tire maintenance program. The advice you receive will be unbiased, for B. F. Goodrich makes a *complete* line of industrial tires. A special TW Analysis is available for manufacturers of industrial hauling equipment.



Heavy equipment and loads? Overloaded tires fail prematurely. Let BFG show you how to properly match tire and load. Make sure you are using the correct inflation pressures for pneumatics.



Avoid tire failures like this. The tire pictured here failed prematurely. BFG's TW Analysis helps you discover the reasons for tire failure, prevents reoccurrences, saves you tire dollars.

Without cost or obligation. The TW man is an expert. His free analysis of your materials handling operations can help you cut tire and tire maintenance expense.



The B. F. Goodrich Company
Tire & Equipment Division
Department TW-408
Akron 18, Ohio

Specify
B. F. Goodrich
tires
when
ordering
new
equipment

Please send me:
☐ Additional information on your Tire and Wheel Analysis Plan
☐ Free copy of "Industrial Tire Guidebook"
☐ Free copy of "How to Get Extra Service out of Solid Industrial Tires"

Name _____
Company _____
Street _____
City _____ Zone _____ State _____

Circle No. 66 on Reader Service Card for more information

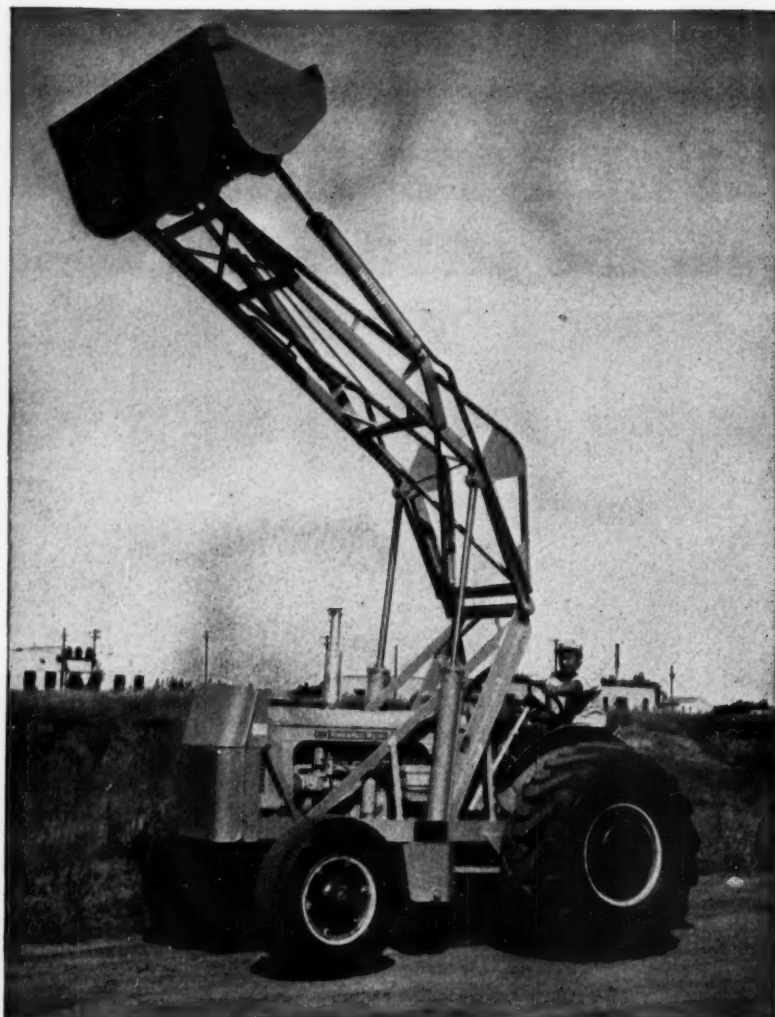
High lift, Big load capacity, Wheeler speed charge hoppers at lower cost

Bin-batching costs drop fast when mixing plants load hoppers with high-lift, long reach, fast-moving MM Wheeler-Loader units.

Loader attachments, built specifically for 30 hp. RTI and 57 hp. UTIL Minneapolis-Moline Wheelers, reach up to load the highest hoppers, out to fill trucks, cars, conveyors.

With exclusive shuttle speeds and instant reversing, the UTIL combines high rate of travel and hydraulic pump efficiency to make each load-and-dump trip in shortest possible time.

Reserve Wheeler power and greater torque at moderate rpm keeps Wheelers operating in heaviest going. For short, fast maneuvering in congested areas, Minneapolis-Moline offers heavy-duty power steering



at lower cost. For any loading job, call in your Minneapolis-Moline dealer-distributor. Let him demonstrate how you can save money by replacing expensive, less maneuverable equipment with lower-cost time-saving Minneapolis-Moline Wheeler units.



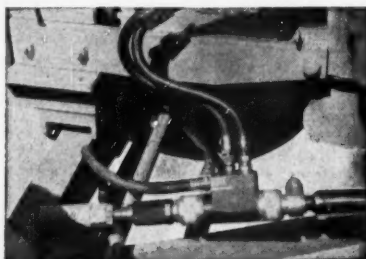
MINNEAPOLIS-MOLINE
Minneapolis 1, Minnesota



Owner of this St. Paul, Minn., mixing plant replaced two loader outfits with this MM Wheeler-Loader unit, loads bins for less.



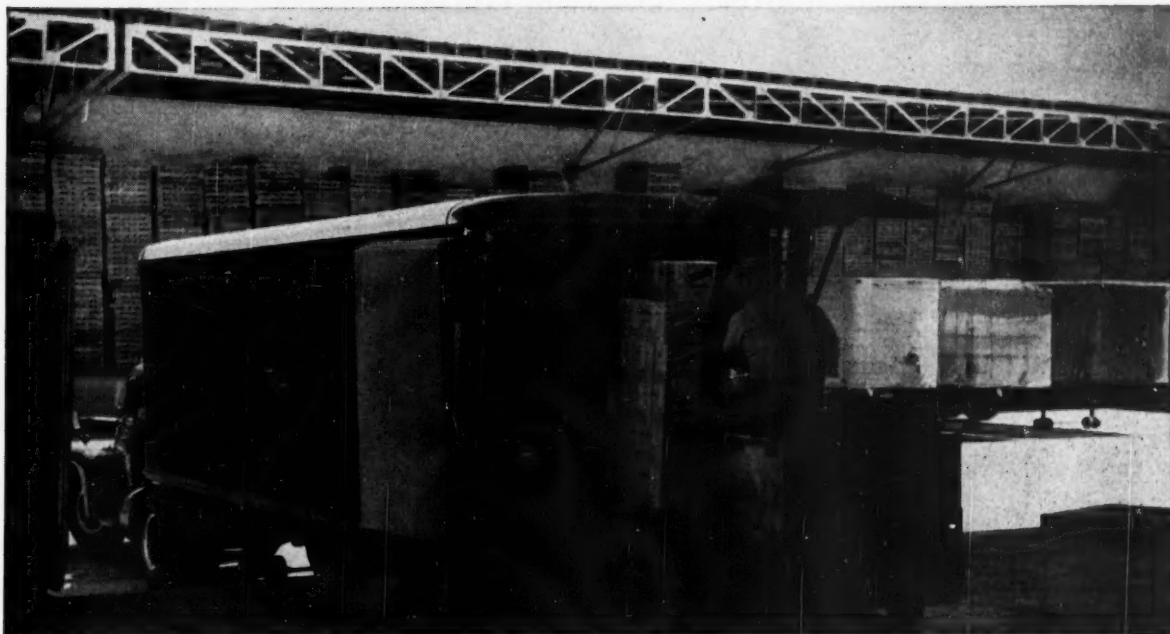
Wheeler maneuverability plus good bucket control speeds up surface mixing operations. Shut-No gearing spots loads in half the time.



UTIL Wheelers available with hydraulic POWER-Flow steering for maximum operating ease. Built-in safety features insure constant control.

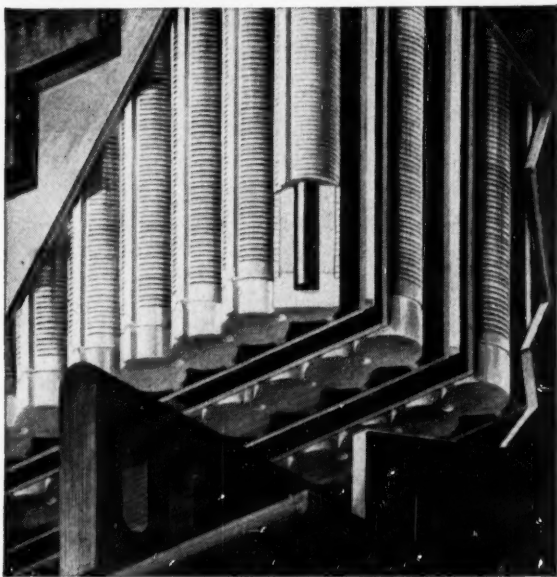
GET MORE LOADS EVERY SHIFT

...with dependable Exide-Ironclad battery power!

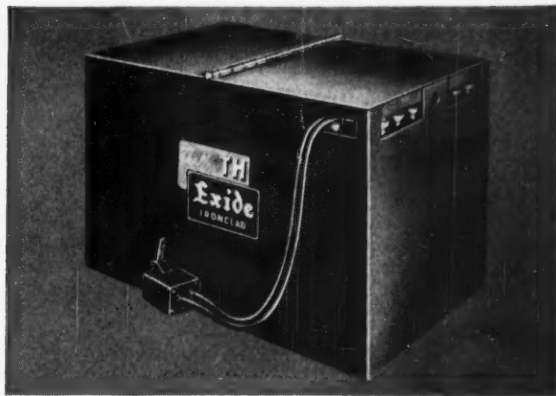


FAST LOADING of highway trucks is assured by the use of fork trucks powered with Exide-Ironclad batteries. An abundance of reserve power keeps trucks working at full speed the entire shift . . . with no unscheduled down time.

Exide battery power means precise spotting with "finger-tip" control, safe handling, no fumes or fuss. Also, proven lower costs for operation, maintenance, and depreciation make Exide-Ironclads your best power buy—**AT ANY PRICE!**



THE POSITIVE PLATES are the heart of any battery. Only Exide uses a slotted tube construction. By use of tubes, more active material is exposed to the electrolyte, providing greater power. Also, more active material is retained, giving longer working life.



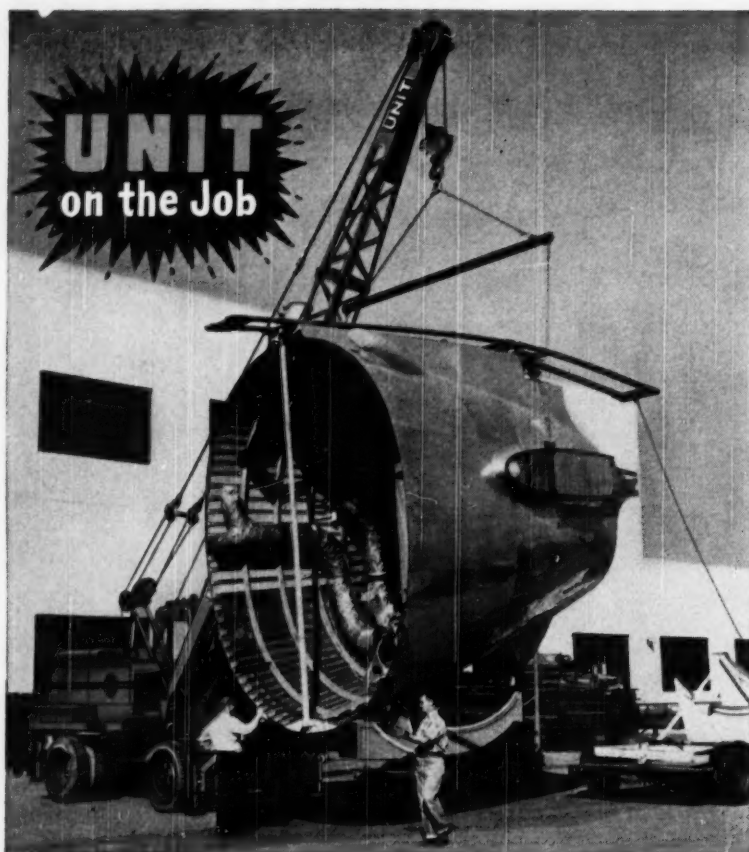
THE NEW THRIFTY HAULER! The improved industrial truck battery. Non-oxidizing plastic power tubes assure longest battery life, more capacity in the same space. For full details, call your Exide sales engineer—write for Form 1982 (Installation and Maintenance of Motive Power).

Your best power buy
...AT ANY PRICE!

Exide[®]
IRONCLAD[®] BATTERIES

Exide INDUSTRIAL DIVISION, The Electric Storage Battery Company, Philadelphia 2, Pa.

Circle No. 53 on Reader Service Card for more information



UNIT
on the Job

picking up a "stub" the easy way

Typical of the powerful "pick-up" ability of UNIT Cranes is the above performance . . . loading a giant aerial "fish" or tail-stub assembly onto a truck trailer. Inside this huge stub, two jet-like gasoline heaters will be installed, with heating capacity comparable to that required to heat 12 six-room homes! UNIT torque drive provides full, steady, nonstalling power . . . greater lugging power . . . elimination of shock loads on machinery. It will pay you to investigate these and other UNIT advantages. Write for Bulletin L-302.

UNIT CRANE & SHOVEL CORP.

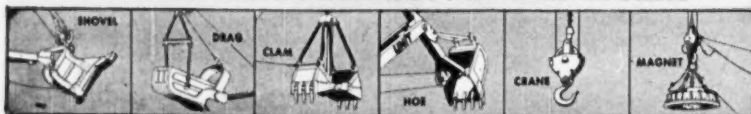
6531 West Burnham Street • Milwaukee 14, Wisconsin



357 Mobile UNIT
the ONE-engine,
ONE-man Unit
. . . self-propelled,
travels anywhere,
rides on rubber, quickly
convertible,
fast, reliable.



**1/2 or 3/4 YARD EXCAVATORS... CRANES UP TO 20 TONS CAPACITY
CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL**



All Models Convertible to ALL Attachments!

Circle No. 133 on Reader Service Card for more information

association and society NEWS

- The first Canadian exhibition devoted exclusively to material handling equipment will be held in Montreal, October 18-22. Sponsor of the event is the Montreal Chapter of AMHS. "The New Science" will be the theme of the exposition, which is expected to attract over 50,000. Chairman of the event is E. Dupre of Northern Electric Co. Ltd. Donald Gordon, president of the Canadian National Railways, will officiate at the opening ceremony.

- Recent new members of the Material Handling Institute are: Sage Equipment Company, Buffalo, New York, manufacturer of conveyor and material handling equipment; and Northwest Engineering Company, Chicago, Illinois, power shovel and crane manufacturer.

- Robert W. Davis, Western Electric Company, was elected president of the New York Chapter, Society for the Advancement of Management, for the coming year. Serving with him will be vice president John W. Roberts of Johns-Manville Corporation; secretary Norman Diamond of Ketay Manufacturing Company; and treasurer Madge Davidson, American Standards Association.

- In its four day annual meeting in Milwaukee recently, the National Society of Professional Engineers is reported to



every study shows a handling saving

80 TONS OF SUGAR PER DAY

SAVES \$30 ON EVERY CAR UNLOADED

RETURNS 84% OF ITS COST

Many companies are checking their handling problems against the American MonoRail Case Study File of "Engineered Applications." The file contains a series of case studies taken from many successful American MonoRail installations. One company saved \$30.00 on every car unloaded. Another doubled metal finish production. A glass plant moved 22 tons of glass batch per hour. Another installation returned 84% of its cost in one year. These are just a few of the many studies covered.

If you want to lower your handling costs, speed up production and cut maintenance overhead, let us send you this file. Just drop us a line on your business letterhead, asking for "Engineered Applications File F-1."



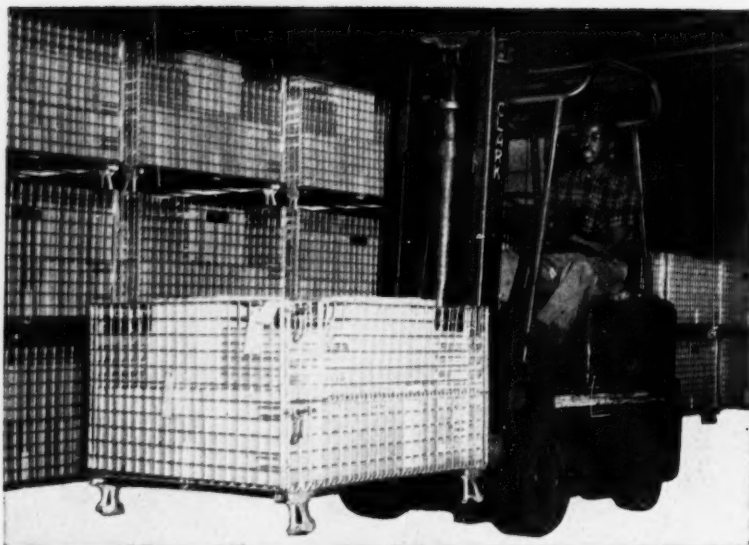
AMERICAN

OVERHEAD
HANDLING
EQUIPMENT

MonoRail^{COMPANY}

13129 ATHENS AVENUE • CLEVELAND 7, OHIO

Circle No. 7 on Reader Service Card for more information



PALLETAINERS



PROBLEM SOLVERS

GOT PRODUCTION LINE TROUBLES? Cluttered aisles? Uneven work flow? Palletainers may solve your problem. Natural receptacles for stampings, forgings or finished parts, they can be moved quick 'n easy from one work point to the next. And to the next and the next! Reinforced steel rod construction is virtually indestructible. Unusually fine protection for loads to 6000 lbs.

STORAGE SPACE YOUR HEADACHE? Palletainers can really help you there. New design of extra-strong malleable cast legs provides 8-way entry for fork trucks... assures solid, totter-free grip on unit below. You can stack 'em to the rafters in safety, yet see the contents at a glance. "Warehouse Palletainer" model has hinged front, can be emptied while at bottom of stack!

SHIPPING IMPORTANT TO YOU? That wonderful Palletainer construction eliminates all damage in transit under normal conditions. New locking device holds sides securely, regardless of load, cannot be released accidentally or lost in shipment. Light weight of unit holds freight costs 'way down and empty Palletainers fold to 1/4 space for further savings on return trips.

WHATEVER YOUR HANDLING PROBLEM let us show you how economically you can solve it with Palletainers. No obligation of any kind... write, wire or call us today.



**UNION STEEL PRODUCTS
COMPANY** ALBION, MICHIGAN

Circle No. 128 on Reader Service Card for more information

ASSOCIATIONS

Continued

have moved a step closer to its long range goal of wide professionalism of engineers. A resolution was adopted setting forth the policy that the NSPE direct its efforts toward a strong program to inform engineers and their employers of their joint responsibility in preserving the integrity of the engineering profession. Clarence Shoch of Allentown, Pa. was elected president of the Society for the ensuing year.

- **Feature event** of the Philadelphia Chapter of SIPHME meeting recently was a film entitled, "Project-Stripcoat". The film showed an experiment concerning preservation of aircraft for long term storage utilizing cocoon (vinyl plastic), designed to protect aircraft in storage for a minimum of five years.

- **A resolution was passed** at a recent general conference of the American Standards Association to develop a standard terminology in the field of automatic controls. The American Society of Mechanical Engineers and the American Institute of Electrical Engineers will provide administrative leadership as sponsor of the project, which will be known as the "Terminology for Automatic Controls" committee.

- **The Canning Machinery and Supplies Association** held its annual spring meeting of the board of directors recently at the Roosevelt Hotel in New York City. President E. N. Funkhouser of Dewey and Almy Chemical Company presided. Various committee chairmen reported on preliminary work in connection with preparations for the forthcoming 48th Annual Exhibit to be held

in the Exhibit Hall and Main Ballroom of Chicago's Conrad Hilton Hotel next February, which is expected to exceed all previous achievements by the Association.

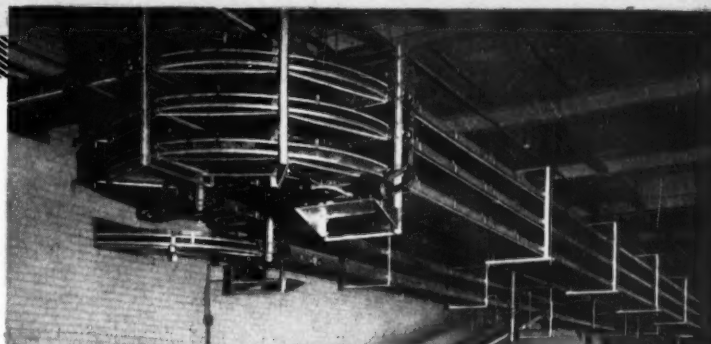
● **Members of the Milwaukee Chapter** of SIPMHE were guests of National Container Corporation at a dinner meeting held recently at the company's new plant. After dinner they were guided on a plant tour by manager G. A. Farrah, and witnessed the film, "From the Tree to the Finished Product".

● **Some 12,000 visitors** from all phases of industry and business witnessed new developments in the field of plastics at Cleveland's Public Auditorium, recently. Occasion was the 1954 National Plastics Exposition, which ran concurrently with the Annual Plastics Conference. This year's sessions featured the plastics-consuming industries of radio, television, rubber, refrigeration, air conditioning and automobiles.

● **A talk on "Materials Handling Problems"** was presented by Herbert Horning of Chrysler Corporation at a recent Philadelphia chapter meeting of SIPMHE. Horning, who is also an instructor in Materials Management courses being given at Wayne University, said, "Eighty-five percent of material handling problems are caused by only 15 percent of materials in my industry . . . Top management is very conscious of the importance of material handling, which can account for as much as 30 percent of labor cost. The material handling engineer in each plant coordinates the work of such departments as planning, production, engineering, traffic, time study and purchasing, and reports directly to the operation manager of the plant".

WENDWAY

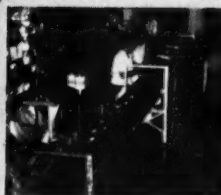
LIGHT PRODUCT CONVEYORS



Wendway is perfectly suited to the cooling of raw products, packages or containers. This "spiral" system travels the cooling products at ceiling height to conserve valuable floor space.

Cut Handling Costs!

Wendway is the modern, light product conveying system that delivers your product to any place you want it . . . smoothly and silently. Through the wall, upstairs or down, all around the plant. Wendway turns corners, goes down the assembly, packing or shipping room line, or back again, in single file or multiple tiers, runs fast or slow, or switch tracks to another part of the plant. Wendway is really versatile! And . . . Wendway saves you money in space, handling costs, convenience and time. It's trouble-free and easy to maintain. Investigate the many Wendway advantages for light product conveying, then see for yourself the many places you could benefit through Wendway's versatility.



This simple, single-tier Wendway system is used to convey fancy packaged nuts from bag loaders through a series of stapling machines and then on to boxing stations.



As fresh sliced cold meat travel by on the Wendway conveying system, the operator labels each type as they proceed to the automatic package wrapping machine.



A typical package conveyor installation, this three-tier Wendway system extends the full length of the shipping dock and carries a steady flow of packages to the waiting trucks.

WRITE TODAY

Gentlemen:—

Please send me complete information about Wendway Conveyor systems as they apply to _____

Name _____

Company _____

Street _____

City _____

Zone _____

State _____

Have a USP Conveyor Engineer contact me at once ☐



UNION STEEL PRODUCTS CO.
ALBION, MICHIGAN

Circle No. 129 on Reader Service Card for more information



**POWER PACKED ACTION
for Today's
Industrial Trucks**

THANKS TO BATTERY POWER!



Specify
THE GOULD "THIRTY"
with New Diamond "Z" Grids—
America's Finest
Industrial Truck Battery

The faster maneuverability of today's industrial trucks requires an unfailing source of power . . . battery power to keep them continuously on the go with a minimum of downtime and maintenance. No power can compete with battery power for utmost dependability, low cost of operation and power-packed, full-shift performance. Nothing can compare with the Gould "Thirty" with Diamond "Z" Grids, either. Brim-full of power-packed action, it gives you the lowest-cost industrial truck power you can buy.

Always Use Gould-National Automobile and Truck Batteries

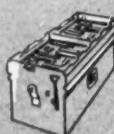
©1954 Gould-National Batteries, Inc.

**GOULD
BATTERIES**

GOULD-NATIONAL BATTERIES, INC.
TRENTON 7, N. J.



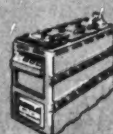
For Railroad
Air Conditioning
and Lighting



For Mine
Shuttle Cars
and Locomotives



For Electric
Industrial
Trucks



For Diesel
Locomotive
Starting

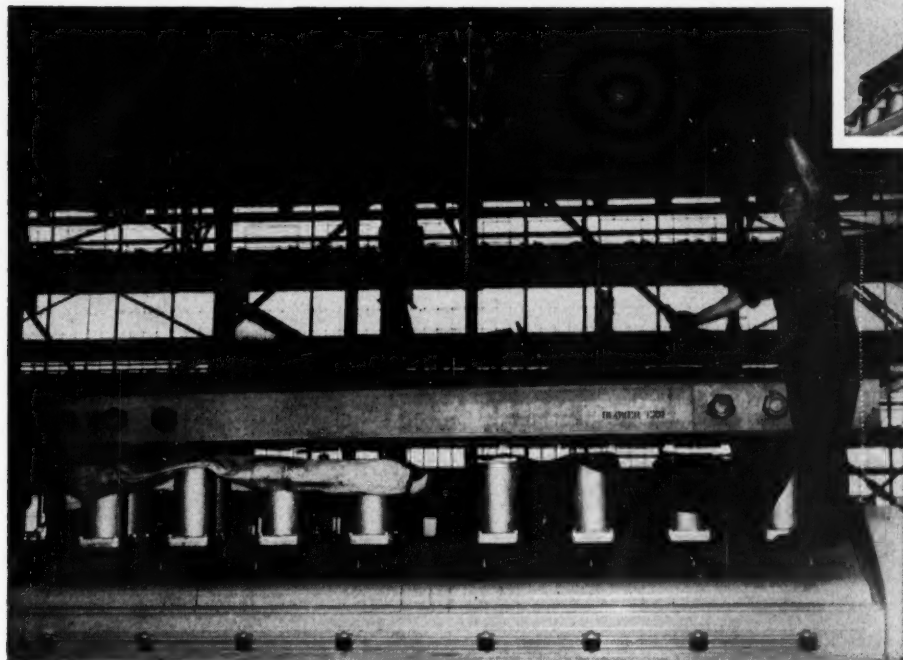


For Standby
and
Emergency Power

Circle No. 69 on Reader Service Card for more information

435 TYPES OF TIGER WIRE ROPE SLINGS

*but here is a unique problem
that required a special design*



**THE RIGHT
WIRE ROPE
WILL DO
THE TRICK!**



A LEADING eastern railroad wanted one sling capable of handling both 12-cylinder, 26,000-lb. and 16-cylinder, 31,000-lb. diesel engines. This customer had to bring diesel locomotives into a repair shop, lift the engines up out of the locomotives, and carry the engines to another part of the shop. Head room was limited, and the engines had to remain level while being moved.

Tiger Brand Wire Rope Engineers solved this tough problem with a special Tiger Sling which consists of a 13-ft. steel spreader beam sus-

pended from 1½" Tiger Brand 6 x 19 Wire Rope. The horizontal angle of the sling legs is 37½°—leaving about a foot of clearance, with the crane hook at the top of its travel. The sling is giving excellent service.

Ordinarily, you can find just the sling you need among the 435 standard types of Tiger Wire Rope Slings. But, when you run into a special job such as this railroad did, we can help you design a suitable sling. Simply get in touch with the nearest Tiger Brand Wire Rope Distributor for any type of sling or wire rope.

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL CORPORATION
GENERAL OFFICES: CLEVELAND, OHIO

COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS AMERICAN TIGER WIRE ROPE SLINGS

Excellency Performed



UNITED STATES STEEL

Circle No. 9 on Reader Service Card for more information

IT WORKS WONDERS IN MATERIALS HANDLING-

300 to 400% increase in efficiency

75% decrease in handling costs



One Truck-Mounted
Dempster-Dumpster Handles Scores
of Containers... All Designs... All Sizes

With the Dempster-Dumpster System, one truck-mounted Dempster-Dumpster accomplishes more than several conventional dump trucks. You eliminate trucks standing idle. You eliminate re-handling of materials. You eliminate loading crews. You increase efficiency, sanitation and good plantkeeping with this Dempster-Dumpster System—the lowest cost method of bulk materials handling ever devised.

It's like having one truck with scores of bodies. One truck-mounted Dempster-Dumpster serves scores of detachable containers built in capacities up to 15 cu. yds. Each is designed to suit the materials to be handled—be they solids, liquids, dust, bulky, light or heavy. You simply place

these containers at convenient materials accumulation points outside or inside buildings. As each is loaded, it is picked up, hauled and dumped (or load set down intact). Entire operation is handled by hydraulic controls in cab by only one man, the driver.

The list of manufacturers using the Dempster-Dumpster equipment reads like the "Who's Who Among the Nation's Leading Manufacturers". We mention this simply to point out that dozens of the nation's oldest and most successful firms use the Dempster-Dumpster System because of its efficiency and tremendous savings. Write to us now for complete information. Manufactured exclusively by Dempster Brothers, Inc.

Representatives in principal cities throughout the United States, Canada and foreign countries. There's one near by to serve you promptly.



DEMPSTER BROTHERS, 684 Shea Bldg., Knoxville 17, Tennessee



James E. Eastman, research and development engineer, and W. R. Gow, sales engineer, discuss features of Magcoa safety curb.

Industry's safest safety curb!

—one of five safety features you get in every Magcoa Dockboard

When you buy a Magcoa Dockboard you have two main things in mind. One is to increase loading efficiency and speed. The other is to *increase loading safety*. The exclusive Magcoa Dockboard safety curb helps you do both . . . with the emphasis on *safety*.

That's what a *safety curb* is for.

The Magcoa safety curb was developed after experience with thousands of curbs. It is the original engineered safety curb, designed to increase safety by preventing equipment run-offs.

Furnished in different sizes for varying load and handling equipment requirements, the Magcoa Dockboard safety curb is the most widely used, and safest, safety curb in industry today



MAGCOA DOCKBOARDS SAFER 5 WAYS

This photo illustrates the five important features that make Magcoa Dockboards safety-first loading equipment.

FROM LEFT TO RIGHT—

1. Rounded curb-ends for easier turns—particularly important on narrow docks.

2. Quarter-round safety curbs—sized for equipment and load requirements—to deflect wheels and prevent equipment from running off.

3. Permanent, raised-pattern safety tread plate to assure safe, positive tire traction—or long-wearing abrasive finish if desired.

4. One-piece hand-holds at all corners molded to fit the hand for complete safety in lifting and positioning.

5. Rugged, bridge-built safety spans for extra strength and elimination of dangerous slipping.

And, of course, every Magcoa Dockboard is constructed of high-strength, low-weight magnesium to avoid painful, costly lifting injuries.

It costs nothing to learn more about Magcoa Dockboards . . . but it might cost a lot if you put it off. Use the handy coupon to get the facts . . . the whole story . . . contained in the unusual Magcoa Dockboard Facts File.

MAGNESIUM COMPANY OF AMERICA MATERIALS HANDLING DIV.
EAST CHICAGO 1, INDIANA

DIVISION OFFICES:

New York 20 • Philadelphia 18 • Washington 5, D.C. •
Houston 17 • El Segundo (L.A.) Calif. • San Francisco 4

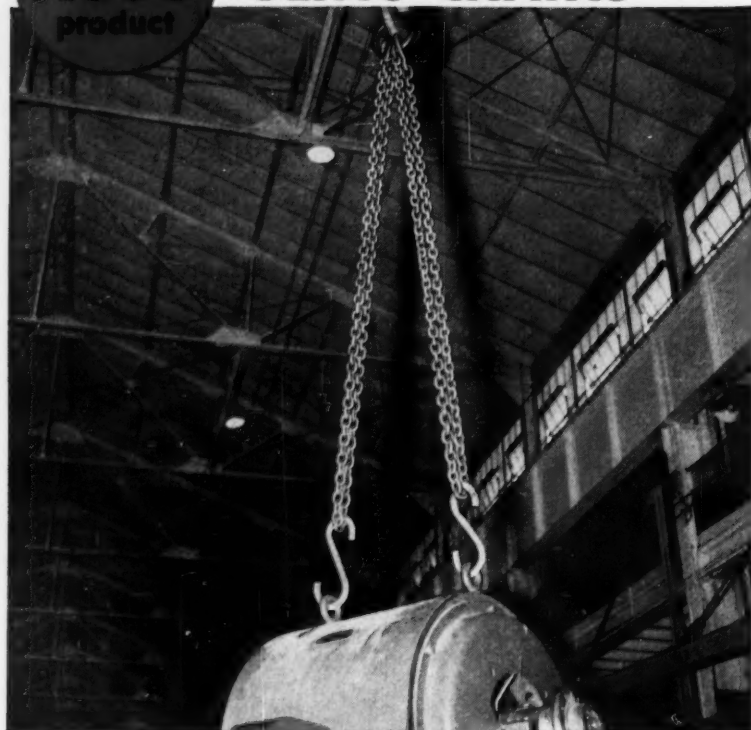
Representatives in principal cities

For a free new Magcoa Dockboard Facts File . . . clip this coupon to your business letterhead, print your name and title clearly . . . and mail today to MAGNESIUM COMPANY OF AMERICA, MATERIALS HANDLING DIVISION, EAST CHICAGO 1, INDIANA.

Circle No. 89 on Reader Service Card for more information



ACCO Registered* SLING CHAINS



You get more than chain when you buy ACCO Registered Sling Chains

• This 125,000 psi ACCO Registered alloy sling chain has great strength, yet it's lightweight and easy for men to handle. It will lift a variety of expensive loads safely over costly machines. You can be sure of that because it's ACCO Registered.

ACCO Registered is more than a name. It's more than a registered trade mark of American Chain & Cable. It is the standard by which all other slings are judged. It means that you can equip your shop with dependable "lifting tools" specifically designed for highest efficiency and long life by trained engineers who spend all their time designing and testing slings.

A survey of your sling requirements will cost you nothing. See your ACCO Registered Sling Chain distributor today or write our York, Pa., office for details. *Trade Mark Registered



WHAT "ACCO REGISTERED" MEANS . . .

- 1 The best material
- 2 Unit safety factor (on bodies, rings, links, hooks)
- 3 Proof test of complete sling to twice the working load limit
- 4 Actual field service test of each design
- 5 Metal identification ring on each sling
- 6 Signed Registry Certificate with each sling



American Chain Division AMERICAN CHAIN & CABLE

York, Pa., Chicago, Denver, Detroit, Houston,
Los Angeles, New York, Philadelphia, Pittsburgh,
Portland, Ore., San Francisco, Bridgeport, Conn.



Circle No. 6 on Reader Service Card for more information

HIGHLIGHTS of the month's NEWS

PRESSURE for the realization of the automatic factory is being exerted by the shortage of engineers, according to David Rubinien, supervisor of the Computer center at Armour Research Foundation of Illinois Institute of Technology.

He has observed that the fully mechanized plant—created through a controlled flow system, mechanical integration of production and material handling, or automation, whichever terminology you prefer—is approaching because of other factors, too. These include:

1. Inability of humans to perform certain jobs with adequate speed
2. Lack of safety in some industrial activities
3. High cost of human participation in some factory areas.

As an indication that the automatic plant is close at hand, he referred to equipment that has, for some time, been performing all the operations necessary to turn out a complete product—as in the food canning and bottling industries, automobile production lines, and continuous strip steel production.

Machinery for these applications is economical because of large quantity runs of a standardized product design or operation he said, and so far such machinery represent only a transition from hand tools to machine tools. Minimum human participation will not come, he pointed out, until there is automatic control of all processes—tools and work will be positioned accurately according to a flexible set of instructions; the flow of work and tools between machines will be governed by controls. Computing machines will do much of the thinking—particularly in offices where detailed work must be done rapidly.

The Illinois Tech scientist does not think the automatic factory is right around the corner. If it is to herald a second industrial revolution, he concluded, there will first be a need to overcome the obstacles of cost for new equipment and further research; extensive product redesign for adaptation to automatic processing techniques; and the current, limited number of engineers skilled in mechanical handling production techniques.

New Responsibilities in Traffic

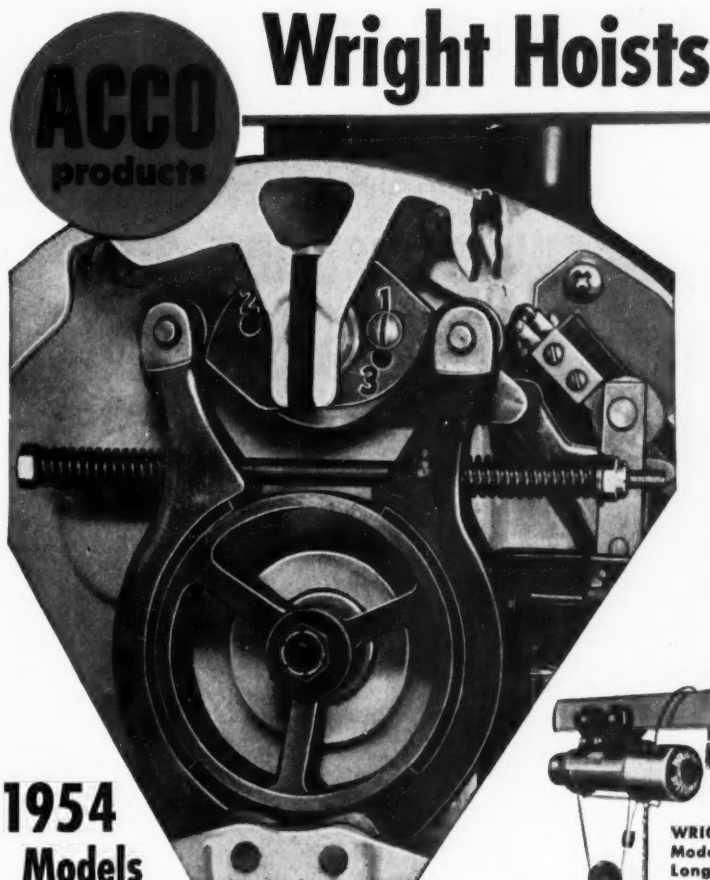
In the April issue of FLOW there was a highly provocative article titled "The Department of 'Physical Distribution'" —discussing a new concept in the organization of material handling, in which concept all movements of all materials in all aspects of a company's operations would be directed from a management-level office. This idea has been growing of late, with material handling and traffic responsibilities merging in a slow but steady trend.

If this trend continuous, and the two responsibilities do finally and generally center in one department, there is even more reason why the direction of distribution must become a distinct department of management organization. There is food for this thought in a talk recently given by John A. Wallace, Director of Traffic for the Ford Motor Company, to the First Michigan Industrial Traffic Conference. He said that, in addition to the historic tasks of the traffic function—control of transportation of raw materials, supplies and products in and out of the factory—the alert traffic man, today, does much more:

1. Assists management in selecting the best plant site long before freight begins to flow. For example, he can advise where the freight advantage of greater proximity to a market becomes overbalanced by the increased cost of moving further from a raw material source.

2. Cooperates closely with the purchasing department to examine actual expense involved in obtaining everything purchased. He can have advance knowledge of large

(Continued on page 121)



**1954
Models**

SMASH MAINTENANCE COSTS!

...Nothing to adjust but the cam!

• The brake assembly pictured above for the WRIGHT FRAME 1 SPEEDWAY HOIST is your assurance of maximum hoist service... minimum down-time. Adjustment of this cam-actuated brake to compensate for brake lining wear is literally "as simple as ABC." *There is no guess work about it.*

When the load hook starts to drift, remove the screw shown at position No. 1 (see picture), swing the cam around so that position No. 2 is in line, and replace the screw that secures the cam to the solenoid lever arm. For the final one-third of brake lining wear, set the cam at position No. 3. This repositioning of the cam is the ONLY adjustment to be made by the users of WRIGHT Hoists. The

brake springs and solenoid are factory-set...NEVER need adjustment for brake lining wear.

Long life is a built-in characteristic of these hoists. They are built and guaranteed for service to the limit of the duty cycle of 30 minute, totally enclosed NEMA specification motors. These 1954 models provide full accessibility of parts for lowest maintenance costs. To get at the brake and controller, you remove two screws which hold the end cover. To get at the limit switch, transformer, and solenoid coil, you remove three screws and the side cover comes off. With this full accessibility you can make a brake adjustment or replace electrical parts in a matter of minutes.

Remember, PRICE + MAINTENANCE = COST. For full details on the low-cost WRIGHT Frame 1 Hoists see your WRIGHT distributor or write our York, Pa., office for literature.

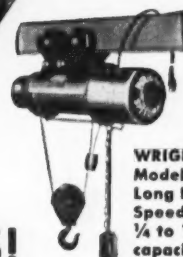
ACCO



**Wright Hoist Division
AMERICAN CHAIN & CABLE**

York, Pa., Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.

Circle No. 124 on Reader Service Card for more information



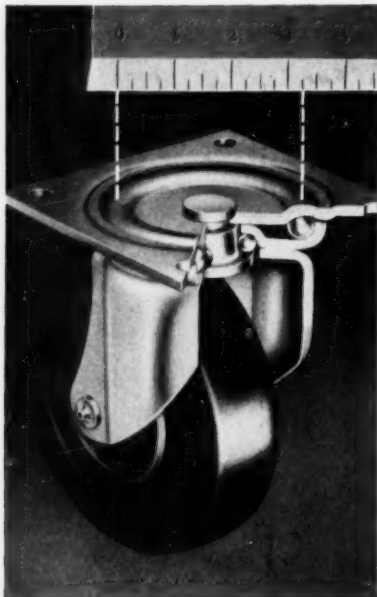
**WRIGHT
Model L-1
Long Lift
Speedway
1/4 to 1-ton
capacities**

**Hoists
Trolleys
Cranes**

MATERIALS-HANDLING NEWS

★ Panel Discussions by Bassick, World's Largest Manufacturer of Casters and Floor Protection Equipment ★

Bigger swivel bearing area keeps heavy loads steady



Reduces raceway wear, gives longer life, easier swiveling

Important in caster design is the diameter of the main swivel bearing and balls.

The larger this area, the greater the safety factor with proportionately less wear and tear on the caster. Avoid premature caster failure by specifying Bassick's — all have extra-quality design features. The Bassick series "99" quality, double ball bearing casters have a main swivel bearing diameter at least 1½ inch greater than the wheel tread width — for easier swiveling and *more-for-the-money* service.

Compare these dimensions with the casters you now use. Your best bet in the long run is Bassick's — they roll and swivel easier and last longer under hard service.

Dripping grease harms floors, boosts your maintenance costs



Sights like this can be a thing of the past in your plant, now that Bassick has perfected its new "3D" caster — no Drip, no Dirt, no Drag. Floor surfaces and rubber wheel treads are safe from damage by leaking lubricant because exclusive Bassick design features seal in grease, seal out dirt or other foreign matter. Write for new catalog sheet 3D99-53.



File test shows extra hardness of Bassick swivel bearing parts

If file bites into raceway surfaces of casters you now use, better think about buying Bassick. Double ball bearing swivel parts of all Bassick cold-formed steel casters are full case-hardened to 15N90 Rockwell. They'll pass your test with flying colors, pay off for you in extra years of wear.

1954, meet 500 B.C.!



U. S. Army Photograph

This striking photo does more than compress history into a single vivid shot of old and new crossing paths in the Orient.

For the lumbering ox-cart with its tremendous wooden wheels isn't much more out of date than some materials-handling systems we've seen in use today. Old-style, inadequate casters are about as far behind Bassick's new 16" "Floating-Hub" caster (below) for 20-mph service, for example, as the ox-cart is behind the airplane.

The safest way to protect cargoes susceptible to shock damage during transport is through use of Bassick's "Floating-Hub" shock absorbing casters and wheels. Write for new "Floating-Hub" catalog FH-53.



New 20-mph caster.

Modernize with Bassick

Your Bassick industrial distributor is the man to see for facts and figures on the most up-to-date line of shock-absorbing and conventional casters. Or you can write to Bassick direct.



THE BASSICK
COMPANY
Bridgeport 2, Conn.
In Canada:
Belleville, Ont.



MAKING MORE KINDS OF CASTERS MAKING CASTERS DO MORE

75 YEARS OF CASTER LEADERSHIP

Circle No. 20 on Reader Service Card for more information

Look at all the features

that are built right into the

PALITON



Fast-acting hydraulic pump; full five-inch lift ensures smooth travel over rough, uneven surfaces.

Twin front wheels for high maneuverability.

Ball bearings fitted in all wheels and steering swivel.

Overloading prevented by factory-set relief valve.

Hard chrome-faced pump piston assures long life.

- Rubber or steel tires to suit customers' requirements.
- Quick and easy detachment of hydraulic unit for service or replacement.
- Controlled lowering speed.
- Pressed steel forks for high strength.
- Capacities—3,600 lb. and 4,600 lb.
- Fork lengths—36", 42", 48".
- Widths overall forks—20½", 27".

- Model illustrated, has been produced to meet universal demand for a pallet truck of high quality and modest cost. It is designed for the simplicity and strength that guarantee long life and trouble-free service.

NOTE THE VERSATILITY OF THE PALITON



Handling pallet loads of heavy parts and components.



Unloading shipments from highway and rail trucks.



Easily maneuvered for maximum space utilization.



Ease of handling with full loads preventing bottlenecks.

HEAD OFFICE:

OMIC, Ltd., 9 George St., London, W.I. England

NEW YORK OFFICE:

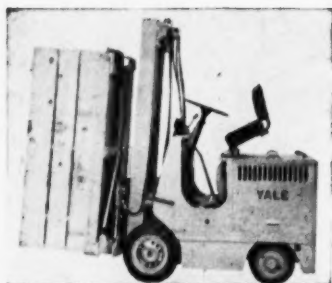
PALITON, Inc., 40 West 29th St., New York 1, N.Y., Murray Hill 5-9323

Circle No. 107 on Reader Service Card for more information



in Equipment

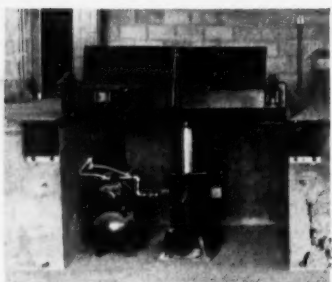
Summaries of latest information from manufacturers. For more details, use the free-mailing Reader Service Card.



Highly Adaptable Crate Attachment

A new hydraulic crate handling attachment developed by The Yale & Towne Manufacturing Company, makes possible the handling of crated appliances such as refrigerators, ranges, dryers and other crated products without the use of pallets. It is possible to handle crates from 38 to 75¼ inches high. In operation, two short metal arms slide under the crate at the bottom and two hydraulically operated clamps press down on the crate from the top to hold it securely for transporting and stacking. Control for the clamp is located conveniently for the driver.

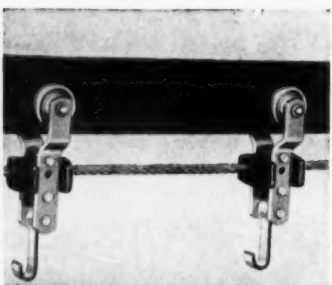
Circle No. 170 on Reader Service Card for more information



Shock-Absorbing Dock Bumpers

Rubber bumpers made especially for use with adjustable loading docks are now being distributed by Bumpers, Inc. Made of durable, resilient rubber, the bumpers complement the firm's line of standard bumpers, used on stationary loading and receiving docks. Simple to install, they prevent damage to truck bodies and to loading docks by absorbing shock of impacts. The rubber, it is claimed, will not pack or flatten, nor will it freeze.

Circle No. 171 on Reader Service Card for more information



Compact Cable Conveyor

Availability of the newly developed bush-lock cable conveyor is announced by The E. W. Buschman Company. The new design is said to increase cable life more than 30 times; facilitate lubrication to protect against acid, moisture and other deteriorating factors; and permit fast, easy maintenance and revision of cable conveyor installations. The shorter radius horizontal and vertical curves permit a more compact layout, thus conserving valuable floor space.

Circle No. 172 on Reader Service Card for more information



Improved Caster Brake

The Colson Corporation has introduced an improved brake for its line of eight and ten inch casters. The brake converts a swivel type caster into a stationary type with the flick of a toe. A foot pedal on one side locks the caster for straightaway operation. Another foot pedal locks the wheel and holds the equipment stationary. The brake is available with a variety of wheels, including semi-pneumatic and cushion rubber tires. Casters are of heavy-gauge stamped steel, with fully adjustable cup and cone ball bearings in wheel and swivel bearings.

Circle No. 173 on Reader Service Card for more information

ANOTHER *First* FOR GERLINGER

Torque Converter now available on All GERLINGER Long Wheelbase FORK LIFT TRUCKS

(Capacities: 12,000, 15,000, 16,000, 18,000, 20,000 and 22,000 lbs.)



WHAT MAKES THE NEW TORQUE CONVERTER DRIVE on GERLINGER

THE HOTTEST NEWS IN THE HEAVY-DUTY FIELD?

HERE'S WHAT TORQUE CONVERTER DOES FOR YOUR GERLINGER FORK LIFT TRUCK!

- 1 Reduces clutch wear to absolute minimum.
- 2 Maximum power and torque available for starting without slipping the clutch.
- 3 Uniform power flow protects entire drive system ... saves wear-and-tear on tires.
- 4 No stalling on grades or lugging of engine at low speeds.

WHAT PERFORMANCE! Here they are! Versatile, rugged Gerlinger Fork Lift Trucks... the undisputed leader for brute strength, especially over rough or muddy terrain... now available with Torque Converter for increased performance and new advantages!

WHAT SAVINGS! The universally accepted hydraulic Torque Converter Drive will pay for itself in reduced maintenance due to smooth acceleration and cushioned engine operation.

WHAT POWER! Automatically combining speed and pull, the Torque Converter puts a new dimension to P-O-W-E-R in the fork lift truck that's recognized as a powerhouse in the heavy material handling field!

WITH OPTIONAL TORQUE CONVERTER DRIVE OR STANDARD TRANSMISSION... GERLINGER OUTMANEUVERS, OUTLASTS ANY COMPARABLE FORK LIFT TRUCK. *Let us prove it!*



G-403

GERLINGER CARRIER CO. • DEPT. TC, DALLAS, OREGON
Please send Gerlinger Fork Lift Truck catalog. No obligation.

Name

Firm

Street

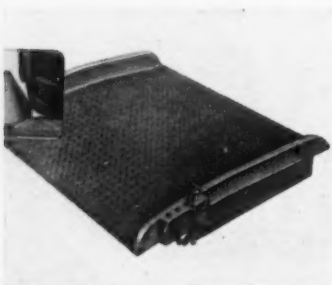
City Zone State



New 3000 Pound Gas Truck

Newest addition to the Lamson Mobilift Corporation line is the "M-324" fork lift truck. The unit has a capacity of 3,000 pounds on a 24 inch load center, 83 inch standard mast height, 128 inch overall height, 64 inch full free lift, and 42 inch wheelbase. Powered by a hercules 4-cylinder gas engine, featured is a heavy-duty, oil immersed, multiple disc clutch, a constant mesh transmission and a fluid coupling. Hydraulically connected equalizers have been mounted on each rear wheel to compensate for bumps or depressions.

Circle No. 174 on Reader Service Card for more information



Improved Magnesium Ramp

Penco Engineering Company is featuring an improved, modern-design magnesium ramp for car loading, truck loading and yard loading operations. Two outstanding features are safety side rails and reinforced safety curb ends. Engineered and constructed to give added years of time-saving operations with utmost efficiency and safety, the ramps are made from light-weight, heavy-duty magnesium diamond safety plate. Capacities range from 1,000 to 16,000 pounds.

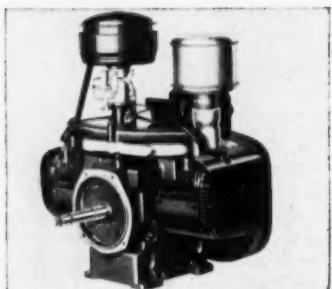
Circle No. 175 on Reader Service Card for more information



Continuous Flow Conveyors

An engineered series of power driven, wire mesh belt conveyors, made in a wide variety of widths and lengths, has been added to the line of conveyors manufactured by the Sage Equipment Company. The conveyors can be operated at constant or variable speeds, to conform with production requirements, and are engineered in capacities to handle light and heavy products. They take advantage of continuous flow where fabric or rubber belts would be impossible. Stationary and portable units are available, and installation is said to be simple.

Circle No. 176 on Reader Service Card for more information



Direct Mounting Engine

Kohler Company's heavy-duty, two-cylinder opposed engine is now being offered in a direct mounting model designated as the K66OP. It may be ordered with three different mounting pads and a variety of power take-off shafts. Specifications include: length, 22½ inches; width, 23¼ inches; height, 27-9/16 inches; and weight, 225 pounds. The power take-off shafts are available in lengths up to 6-9/16 inches. Power output for the air-cooled, gasoline model ranges from 26.8 hp at 3600 rpm to 15 hp at 1800 rpm.

Circle No. 177 on Reader Service Card for more information



Overhead Bucket Loader

Merton Engineering Co., Ltd. is marketing a bulk handling unit which is termed the "Overloader". Bucket capacity is ½ cubic yard. Return of the bucket is initially assisted by powerful springs which can impart a shaking action and facilitate the complete discharge of sticky material. Said to be adaptable to any type project, the loader's large tires permit smooth operation on the most difficult sites. It has a 4-cylinder Fordson Major engine, constant mesh gears, and six forward and two reverse speeds.

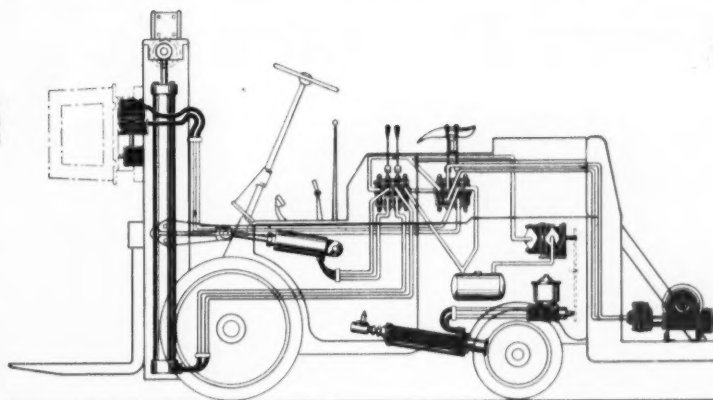
Circle No. 178 on Reader Service Card for more information
(Continued on page 150)

VICKERS[®] HYDRAULICS

The MARK of

SUPERIOR MATERIALS HANDLING EQUIPMENT

Fork lift truck uses Vickers Hydraulics in one circuit for lift, tilt, roll-over, and winch operation. A separate circuit provides Vickers hydraulic power steering.



ASK FOR NEW
BULLETIN M-5101

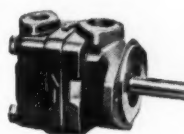
"Vickers Hydraulics" on materials handling equipment denotes superiority in two ways: First, the maker has obtained the benefits of the best in hydraulic equipment. Second, such care in the selection of hydraulic units generally denotes good design and careful construction throughout.

Among the important advantages of Vickers Hydraulics are simplicity of hydraulic design and of installation, complete flexibility of control, inherent protection against abuse and overloading. For further information get in touch with your nearest Vickers Application Engineering office.



Vickers Pump for Hydraulic Power Steering

This pump is vane type, hydraulically balanced, and has automatic wear compensation. Series VT4 has integral volume control and relief valves and oil reservoir.



Vickers Pumps (Single and Double)

Balanced vane type pumps that automatically maintain optimum radial and axial running clearances over complete pressure range and throughout pump life. The result is long life and maintained high efficiency.



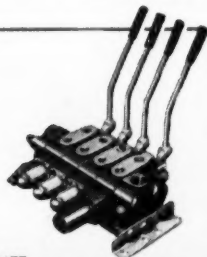
Vickers Hydraulic Power Steering Booster

Provides effortless, positive and shockless steering. With the touch of only a finger, driver can steer the heaviest vehicle on or off the road. Fatigue is reduced and driver efficiency increased.



Vickers Hydraulic Motors

Balanced vane type with exclusive "rocking beam" construction and automatic wear compensation. Variable horsepower (constant torque) characteristics; reversible and can be stalled under load without damage.



Vickers Multiple Unit Valves

Assemblies of standard interchangeable sections provide any desired combination of directional control functions. Exclusive porting arrangement provides smooth and selective inching control and accurate positioning.

VICKERS Incorporated

DIVISION OF THE SPERRY CORPORATION

1538 OAKMAN BLVD. • DETROIT 32, MICH.

Application Engineering Offices: ATLANTA • CHICAGO (Metropolitan) • CINCINNATI • CLEVELAND • DETROIT • HOUSTON • LOS ANGELES (Metropolitan) • NEW YORK (Metropolitan) • PHILADELPHIA (Metropolitan) • PITTSBURGH • ROCHESTER • ROCKFORD • SEATTLE • TULSA • WASHINGTON • WORCESTER

6677

ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

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LORAIN CRANE

FEEDS FOUNDRY MIX AT

Henry Furnace Co.



A Lorain TL25-K crawler crane becomes a production tool at the Henry Furnace Co., Medina, Ohio, as it uses a 36" magnet to load cupola charging buckets with an accurate mixture of scrap and pig iron.

"Domestic" and "Foreign" scrap and pig iron are stockpiled separately within reach of the Lorain's 30 ft. boom in a 180° arc. The charging bucket to be loaded is placed on a scale and the crane operator carefully loads the 2,000 lb. capacity bucket with the correct number of pounds of each material to make the proper mix. An electric overhead crane picks up the bucket and carries it into the cupola. Up to 120 tons a day are fed into the foundry in this manner.

When the Lorain is not busy on this job, it unloads cars of scrap and pig iron to stockpiles with the magnet and uses a clamshell bucket to handle coke and foundry sand. There always is a job that needs doing around the plant that can be done quickly, efficiently and at low cost by this Lorain. This is the second Lorain purchased by Henry Furnace Co.

Now—think of your plant! The materials you handle . . . the jobs to be done . . . the manpower required . . . then put a Lorain Crane in your picture.

You'll find a score of ways to save time, money and manpower—just as the Henry Furnace Co. is doing with its Lorains. Now is the time to let your nearby Thew-Lorain Distributor help you with specific facts and figures. Call him today!

LORAIN CRANES ON RUBBER-TIRES, TOO

If your plant operation calls for a crane to make many moves—fast—all over the yard, then it's a job for a Lorain on rubber tires. Choose from 45 m.p.h. Moto-Cranes (2-engine type), or 7 m.p.h. Self-Propelled Cranes (single-engine type) to fit your needs. Crane capacities on rubber tires up to 45 tons—on crawlers up to 61 tons. A wide selection of 16 or more front end attachments are available to handle any size, shape or type material. Your Thew-Lorain Distributor offers you the "world's most complete selection" of material handling cranes.

THE THEW SHOVEL CO., LORAIN, OHIO

THEW LORAIN

OFFERING MORE THAN 136 SHOVEL CRANE
COMBINATIONS ON CRAWLERS OR RUBBER TIRES
TO BEST FIT YOUR JOB FOR PROFIT!

Circle No. 125 on Reader Service Card for more information

There's more to
BUDA
 than meets the eye!

Take its rugged frame
 for example!

The backbone of *any* lift truck is its frame. For on the frame, the truck is built. With this in mind, Buda designed its revolutionary, new automotive type frame. The awkward, old-style box frame and its space-taking "X" bracing were abandoned. In its place you'll find main members of high carbon steel. You'll find deep-sectioned cross members . . . three of them for maximum torsional rigidity. The space gained permits use of heavier, more durable parts . . . parts that are easy to get at when necessary. There are no nuts and bolts to come loose on the Buda frame. It's joined with high strength steel welds and reinforced at all critical points for permanent unit strength. What does this mean to you as a Buda Lift Truck user? It means you get a stronger, more accurately built truck . . . an easily serviced, longer-lasting truck. It means, too, that Buda is a most economical truck.

You Need . . . this new Buda facts book. Serves as standard of comparison for all lift trucks. Send for your free copy now!



BUDA

The Buda Company, Harvey, Illinois
 A Division of Allis-Chalmers Manufacturing Co.

Diesel and Gasoline Engines, Lifting Jacks, Railroad Equipment, Earth Drills, Materials Handling Equipment

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NEWS VIEWS TRENDS

FIBERGLASS BOX FIRM FORMED

The formation of Fiberglass Box Company, Inc., Ashtabula, Ohio, was recently announced. Primary products of the company are custom-built insulated boxes and trays. Basically, the containers are made of fiberglass reinforced plastic with a framework of aluminum or electro-galvanized steel. Officers of the new firm are: J. Robert Newlon, president and treasurer; Cecil Cadwell, vice president; and Theodore Warren, secretary.

HYSTER GUARANTEES USED TRUCKS

Dealers of the Hyster Company have initiated a written warranty program on used lift trucks, designed to give confidence to small-business buyers or those who need a stand-by second truck. Use of the warranted used trucks is said to also make possible a low cost material handling experiment or trial of a new system.

INTERNATIONAL PAPER BUYS APEX

All outstanding stock of American Paper Exports, Inc., formerly held by several other paper companies, has been purchased by International Paper Company. With representatives located throughout South and Central America, the West Indies, Philippines and Far East, Apex has for many years operated as an export outlet for International and other North American paper manufacturers. International president Richard C. Doane said the company's overseas organization will remain unchanged. I. C. Baldwin will continue as president of Apex.

TWYMAN CITES NEW MARKET

Elmer F. Twyman, vice president of Yale & Towne Manufacturing Company, spoke before a group in Chicago recently on the tremendous new market being developed by the mechanized handling equipment industry, which he said bears a striking resemblance to the overall operations of the automotive industry. The similarity was cited in product variety, established parts and service stations, and financing organizations, all of which are now common-place in the material handling industry. Twyman presented facts on the widespread occupational accident rate caused by old-fashioned manual handling methods, and said, "All of this cost in manpower, time and money can be greatly lessened by the use of modern mechanized handling equipment. We of Yale & Towne view the national, grass roots acceptance of mechanized handling equipment as one of the most important steps in the direction of this vital social goal."

COAST-TO-COAST FOR QUAKER

H. K. Porter Company, Inc., Pittsburgh, Pennsylvania, a division of Quaker Rubber Company, recently acquired Pioneer Rubber Mills of San Francisco, California, largest manufacturer of industrial rubber products on the Pacific Coast. Pioneer's general offices have accordingly been moved to Pittsburgh, California. The acquisition of Pioneer makes Quaker the only industrial rubber concern in the United States with factories on both the Atlantic and Pacific Coasts, according to Porter's president, T. M. Evans, who says the move will make possible even better service to customers.



Takes the "cramp" out of cramped quarters

Turns 10" shorter circle . . . moves up to 25% faster

Rear steering wheels of the Jaeger 12 cu. ft. Auto-Scoop make shortest turn . . . in only 6'6" radius with bucket in carry position (5" shorter than other scoop loaders). That's a big advantage when unloading box cars, working in narrow aisles or cramped quarters. When you figure how often those fewer inches avoid extra maneuvering in tight spots, you can see how this feature alone saves productive minutes every hour.

With this increased maneuverability, the Auto-Scoop shortens time on every trip. It travels up to 25% faster, both forward and reverse. Two speeds forward and two reverse offer speed selection to suit each condition of service. The simple shift of an independent forward-reverse lever provides split-second changes in travel direction.

For bigger work, Jaeger offers the 1 cu. yd. Load-Plus, with torque converter, power steering and either front-wheel or 4-wheel drive.

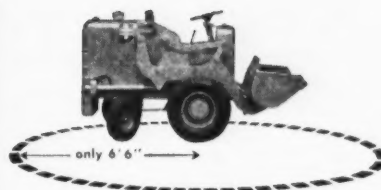
The Jaeger Machine Company, 611 Dublin Avenue, Columbus 16, Ohio

JAEGER LOAD-PLUS *auto-scoop*

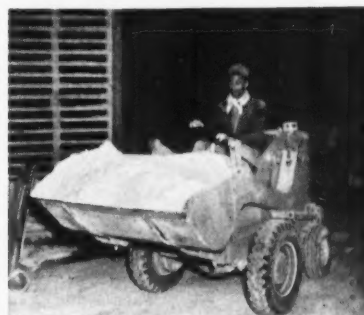
AIR COMPRESSORS • PUMPS • MIXERS • PAVING MACHINES
Distributors throughout U.S. and Canada and Principal Cities of the World

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FLOW • AUGUST, 1954



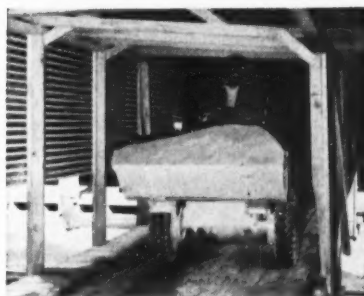
5" shorter turning radius (only 6'6").



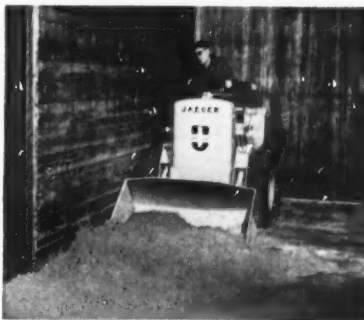
Faster speeds (6.55 and 13.88 mph in reverse, 3.8 and 7.66 mph forward).



20% more lifting capacity (1200 lbs.).



Compact design. Simplifies work where aisles are narrow, headroom low.



Wider bucket. Works flush against walls, into corners, for clean pick-up.

CLARK HEAD EXPRESSES OPTIMISM

Long-range optimism for continued growth and expansion of the construction, material handling and automotive industries was expressed in a speech recently by George Spatta, president of Clark Equipment Company. With sales last year in excess of \$122 million, Clark recently entered the construction equipment field. Spatta said, "Although the industries we serve have grown considerably in the past decade, there is good cause to believe their growth cycles will not reach full maturity for some years to come. Consequently, we consider the long-term outlook for our own company to be good."

SIPMHE SPONSORS PALLET PROJECT

The Society of Industrial Packaging and Materials Handling Engineers will sponsor the American Standards Association project on pallet standardization. The American Society of Mechanical Engineers will act as co-sponsors. Scope of the project is standardization of nomenclature, materials, sizes and components of pallets, including sampling, inspection and test procedures, as recommended by interested industry representatives at a recent meeting in New York.

THOMPSON PRODUCTS ENTERS T.V. FIELD

The purchase of Dage Electronics Corporation of Beach Grove, Indiana, by Thompson Products, Inc., manufacturers of aircraft, automotive and electronics parts, marks the firm's entry into an entirely new field. A producer of Vidicon television cameras and related equipment, the Dage assembly plant will operate as a decentralized unit of Thompson's Electronics Division, continuing in its present location, according to company president, J. D. Wright.

DUPONT EXPANDS PACKAGING RESEARCH

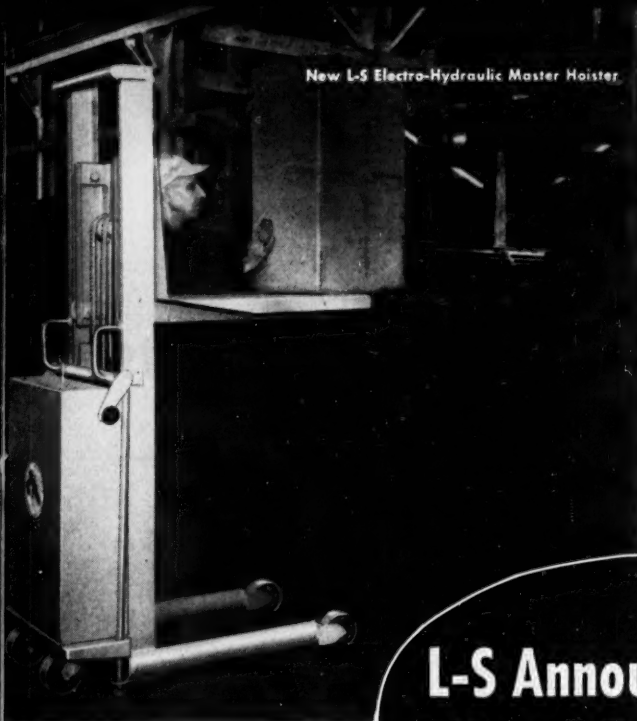
A new research laboratory for the film department of E. I. du Pont de Nemours and Company is being constructed in Wilmington, Delaware. The laboratory will be devoted primarily to research in synthetic polymers for the general field of packaging and industrial films. The new facilities, representing an investment of \$1,275,000, are scheduled for completion by the end of 1955.

ATLAS CHAIN MOVES

The new home office and factory of Atlas Chain & Manufacturing Company is 288 N. Main Street, Doylestown, Pennsylvania.

WAYNE ACQUIRES LINE SWEEPERS

Wayne Manufacturing Company, Pomona, California, has announced the acquisition as a wholly owned subsidiary of Line Manufacturing, Inc., Los Angeles, manufacturers of industrial motor sweepers. The sweepers will be marketed under the Wayne name and will complete a full range of sweeping equipment, from the smallest type motorized sweeper through the large 3 cubic yard capacity.



New L-S Electro-Hydraulic Master Hoister



L-S SpaceMaster Model "E" Electric

L-S Announces New "Try-a-Truck" Plan



New Lightweight Hydraulic Pallet Truck



L-S SpaceMaster Model "J" Electric

Here's how you can participate:

The new "Try-a-Truck" Plan makes any standard Lewis-Shepard Truck available to you for a free try-out in your own plant. You can put the truck of your choice through its paces for 3 days or longer handling *your* unit loads under *your* operating conditions. You'll learn first-hand how an L-S Master Line Truck—from the Most Complete Line of Materials Handling Trucks—can cut your costs . . . improve your handling operations.

Interested in leasing?

Lewis-Shepard offers complete Leasing, Financing and Renting facilities. For example, a 2000 lbs. capacity L-S Electric Fork Truck can be leased for as little as \$2.68 per day. Mail the coupon for full information.

For full information on the L-S "Try-a-Truck" Plan, write to Lewis-Shepard today. Use the coupon for convenience!



The "MASTER" Line

LEWIS-SHEPARD

104-8 Walnut St., Watertown 72, Mass.

I am interested in:

- ☐ New Lewis-Shepard "Try-a-Truck" Plan
☐ L-S Leasing, Renting and Financing facilities

Name _____ Title _____
 Company _____
 Address _____
 City _____ State _____

Circle No. 83 on Reader Service Card for more information

Literature

featured in this month's advertisements

Flexible Overhead Conveyors: Designed to handle, in continuous production, any load a man can lift, Zig-Zag continuous power conveyors of Richards-Wilcox Mfg. Co. come in a choice of drive units for 10 to 1 variations, or better, in speed. The manufacturer will send complete information.

Circle 114 on Reader Service Card

Reserve Power: Non-oxidizing, plastic power tubes of the new Exide battery provide long life, high capacity per unit of space. Form 1982, available for the asking, covers "Installation and Maintenance of Motive Power".

Circle 53 on Reader Service Card

Reducing Packaging Costs: Details on the solution of closing problems are available from International Staple & Machine Co. There are some 20 standard models to suit particular packaging needs—and reduce packaging costs.

Circle 152 on Reader Service Card

Vulcanized Fibre Equipment: A brand new catalog just released by Fibre Specialty Div. of National Vulcanized Fibre Co. illustrates and describes in detail a wide range of equipment for a wide variety of material handling operations.

Circle 58 on Reader Service Card

Handling in Narrow Aisles: High speed handling in 5 or 6 foot aisles is described among abilities of the new Warehouse line of lift trucks produced by Yale & Towne Mfg. Co. Full details on the entire line are provided for the asking.

Circle 141 on Reader Service Card

Cost-Saving Examples: A portfolio of case histories covering savings recorded in a wide variety of plants comprises the "Baker Handling Library", which is available at no cost from The Baker Raulang Co.

Circle 18 on Reader Service Card

For High-Speed Lifting: Worm drive hoists by Electro-Lift come in capacities up to 6 tons, with optional push button control. They're safe, smooth-working and quiet, says the manufacturer, who invites readers to write for full information.

Circle 54 on Reader Service Card

Towline Trucks: There are 13 standard models, with five types of tow mechanisms, in the line of Nutting trucks for overhead or under-floor conveyors. The manufacturer, Nutting Truck & Caster Co., offers Bulletin 54-TL which gives details on trucks for every handling purpose.

Circle 105 on Reader Service Card

Truck Trial and Lease Plans: The "Try-a-Truck" arrangement as well as plans for leasing, financing and renting industrial vehicles are detailed in information provided by Lewis-Shepard Prods., Inc. The trial plan allows the free use of a choice of vehicles for three days or longer.

Circle 83 on Reader Service Card

From Trickle to Torrent: Bulletin 5302 of Richardson Scale Company is offered to those interested in versatile bulk feeding equipment that will handle a wide range of materials at low cost and high efficiency. This mechanical vibrating feeder takes little space, has easily adjustable controls, provides safe, low-vibration operation.

Circle 142 on Reader Service Card

Cut Shipping Costs: How strapping—steel and/or tape—can help make substantial savings in shipping operations is detailed in information which Brainard Steel Div. of Sharon Steel Corp. is willing to supply to interested readers.

Circle 27 on Reader Service Card

Industrial Bins: If you have a storage problem, Kalamazoo Tank and Silo Company invites you to investigate, through Bulletin 1153-B, the potentials of their vitrified glazed tile storage bins.

Circle 78 on Reader Service Card

There's a lot
you can't see...

when you look at a
PAYLOADER®
tractor-shovel.

YOU CAN'T SEE the 34 years of pioneering experience in building hydraulic tractor-shovels — MORE experience than all others combined!

YOU CAN'T SEE the millions of dollars of parts and service facilities which more than 300 "PAYLOADER" Distributors maintain for their customers' convenience.

YOU CAN'T SEE that 90% of all the "PAYLOADER" tractor-shovels built in the last fifteen years are still in service!

YOU CAN'T SEE the more than 22,000 "PAYLOADER" units throughout the world — more than all others combined!

YOU CAN'T SEE the quality of hidden parts which are built more carefully, to more rigid specifications and with more "know-how" than any other.

The Overwhelming Preference for "PAYLOADER" tractor-shovels is the result of *proven* performance and customer *satisfaction*. Ask any owner or operator.

For complete information contact your "PAYLOADER" Distributor or write to The Frank G. Hough Co., 731 Sunnyside Ave., Libertyville, Illinois.



PAYLOADER®

THE FRANK G. HOUGH CO. • LIBERTYVILLE, ILL.

SUBSIDIARY-INTERNATIONAL HARVESTER COMPANY



Circle No. 74 on Reader Service Card for more information

AD LITERATURE

Continued

All-Purpose Pallet Truck: Complete information is available on a new line of pallet trucks said to have been produced to meet demand for high quality at a modest cost. Capacities range to 4600 pounds.

Circle 107 on Reader Service Card

Six Sets of Specifications: Data offered by Conveyor Specialty Company, Inc., cover the firm's line of adaptable, slider-bed belt conveyors. Currently available specifications covers: "The Unitable", "Other Belt Conveyors", "Reciprocating Lifts", "Slat Conveyors", "Gravity Conveyors", and "Complete Package Handling Systems."

Circle 42 on Reader Service Card

SIPMHE Exposition: Are you interested in a Short Course in Packaging and/or Material Handling... the National Packaging and Material Handling Competition... an exhibit of products, equipment and materials for packaging and handling? The Society will be glad to send you full details.

Circle 120 on Reader Service Card

Practical Packaging Data: A series of eight, free, technical bulletins on packaging can be obtained from Better Packages, Inc. Subjects include: #3, Tape Moistening Requirements for Various Carton Surfaces; #5, Gummed Tape Glues and Adhesives; #9, Tape Applications—Building Strength from Weakness.

Circle 24 on Reader Service Card

High Capacity Battery: That the new "MC" storage battery (of Thomas A. Edison, Inc.) provides 25 percent more capacity than has, until now, been available from nickel-iron-alkaline batteries is included in full information available from the manufacturer.

Circle 52 on Reader Service Card

Multi-Purpose Container: For loads to 6000 pounds, collapsible containers of Union Steel Products Co. are suggested for use on production lines, for storage, and in shipping and other transit phases of handling. The company offers advice on individual handling problems.

Circle 128 on Reader Service Card

For Narrower Aisles: A hydraulically operated attachment for a lift truck, called the "Swing-Shift Unit", will quickly position a load into alignment without moving the truck. Aisle width is said to be reduced as much as 19 percent. Write for more details.

Circle 123 on Reader Service Card

**For most efficient
DOCK OPERATION**

Specify **RITE-HITE® ADJUSTABLE LOADING RAMPS**

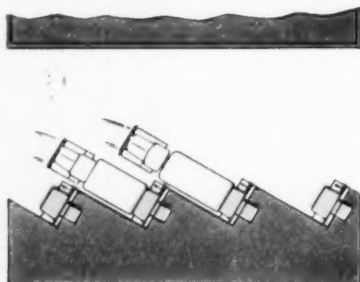
Rite-Hite makes it possible for you to utilize available dock area to best advantage. Rite-Hite insures parking of trucks in an orderly, space-saving manner. Loading and unloading is speeded, efficiency of dock operations is increased, costs are reduced.

A permanent part of the dock, Rite-Hite is maintenance-free, works on a simple but unique counterbalance principle, will give trouble-free service year after year.

Installation in new construction adds practically nothing to the cost of the building. In existing construction, installation costs are modest.

Rite-Hite offers 5 models in capacities of 10,000 and 20,000 pounds. Priced from \$395.

It will pay you to investigate Rite-Hite Loading Ramps for your loading dock operations.



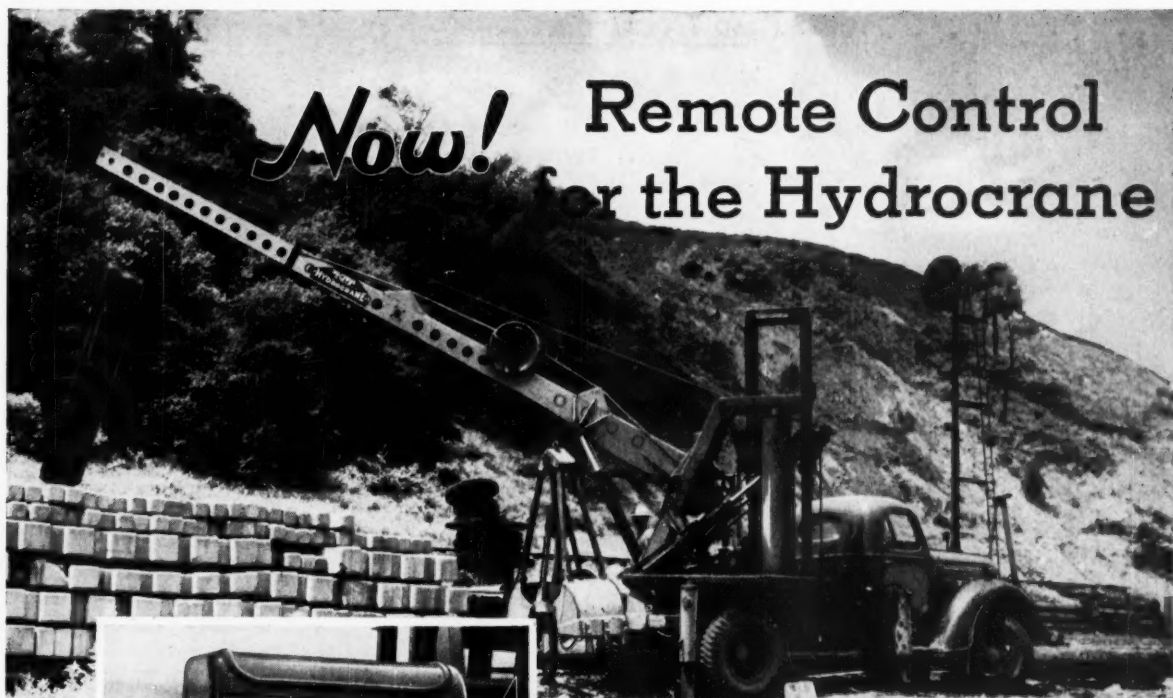
Rite-Hite Loading Ramps installed in a dock at an acute angle to provide safe, efficient material handling in a limited area.

RITE-HITE®
LOOMIS MACHINE COMPANY
DIVISION
FOURTH AND PINE STS., CLARE, MICHIGAN

Circle No. 84 on Reader Service Card for more information

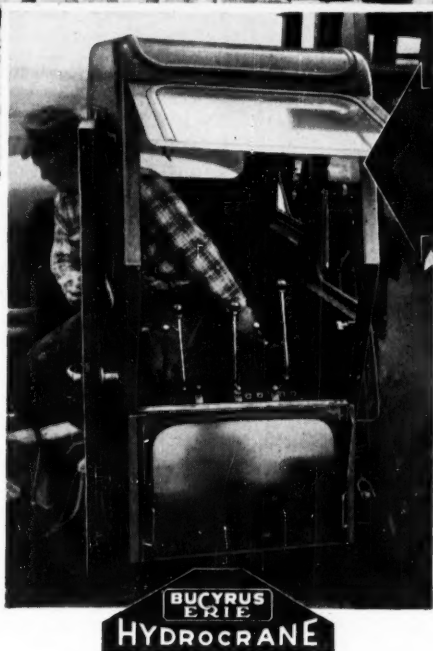
Send for this
**EIGHT-PAGE
BULLETIN,
TODAY.**
Dept. F-84





Now!

Remote Control for the Hydrocrane



*You Can Drive It Right
from the Crane Cab*

HERE'S ANOTHER NEW HYDROCRANE feature for '54 — remote control. With this outstanding advantage, you can start the truck engine, drive the crane ahead, reverse it, steer it, brake it, stop it — without even moving out of the crane operating cab. In addition the truck is provided with air brakes.

Think of the time you save on move-ups with this outstanding new feature. No need to leave the operator's station and get behind the truck wheel just to move the crane up a few feet. With remote control, the Hydrocrane operator can keep full command of both truck and load at all times. You don't need another man to drive the truck.

• SYSTEM EXTREMELY SIMPLE •

... has three basic parts — air supply system, control valves, and actuating cylinders. Air from truck brake compressor is delivered to storage tanks, then to crane operating cab. Fingertip levers operate valves directing air through piping to actuating cylinders for truck clutch, brake, gear shift, and steering arm. Truck engine controls, located in crane cab, include ignition switch, starter button, and hydraulically controlled throttle.

36H54

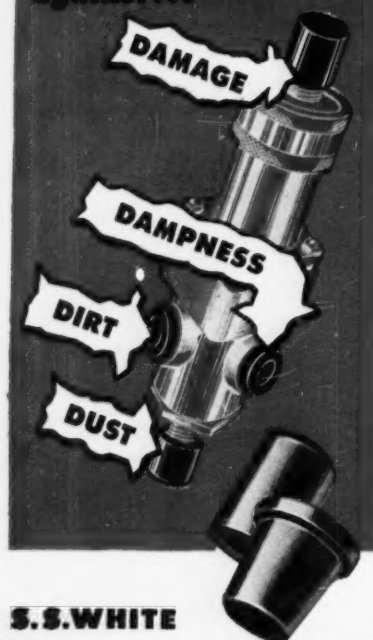
Get the facts first hand. Drive the new remote control Hydrocrane yourself. Arrange an appointment with your Bucyrus-Erie distributor.

BUCYRUS-ERIE COMPANY

South Milwaukee, Wisconsin

Circle No. 153 on Reader Service Card for more information

First line of defense
against...



S.S.WHITE ELASTOPLASTIC PLUGS AND CAPS

When you make an expensive part, it's good business to protect it against needless damage during shipment and storage. The way to do this — at minimum cost — is with S.S.White Elastoplastic Plugs and Caps.

These inexpensive flexible plastic closures are designed to cover or seal important openings or studs. They keep dirt and moisture out of interior parts — protect ends of tubing and studs — and seal in hydraulic fluids.

Besides being low in cost, S.S.White Elastoplastic Plugs and Caps are easily applied and removed — they're unaffected by oil, grease and gasoline and are available in a wide range of sizes for every need.

WRITE FOR BULLETIN P-5312

It has full details on S.S.White Elastoplastic Plugs and Caps. Sample plugs and caps can also be furnished on request.



Circle No. 137 on Reader Service Card

AD LITERATURE

Continued

Industrial Truck Battery: High maneuverability of industrial vehicles demands a reliable source of power, says Gould-National Batteries, Inc., and they will provide information on their latest equipment, the Gould "Thirty" upon request.

Circle 69 on Reader Service Card

Guaranteed Selectivity: Upon request, General Electric Co. is providing full details on a new "Guarantee Policy" for industrial, 2-way radio. The warrantee, "Selectivity Guaranteed for Life", applies to every new G-E unit, regardless of type.

Circle 63 on Reader Service Card

Build A Conveyor: Complete details, illustrations and installation instructions can be obtained on Michna Systems' plan with which one can lay out and erect an overhead conveyor from standard parts. A new 16-page catalog has just been issued.

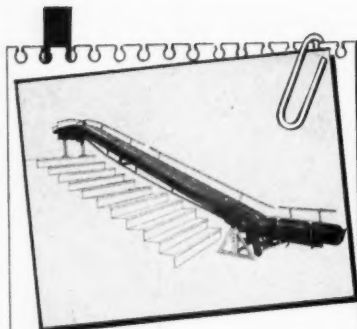
Circle 151 on Reader Service Card

Tackle Blocks Lower Costs: Pointing out that worn sheave grooves, bearings and pins are expensive, Madesco Tackle Block Co. offers a complete catalog which, with their engineering service, is designed to save money for the user.

Circle 86 on Reader Service Card

Metal Process Belts: Woven and flat wire designs of belts in a wide variety of metals and alloys are designed to maintain processes and material flow. Manufacturer, Ashworth Bros., Inc., invites requests for a new, illustrated catalog.

Circle 14 on Reader Service Card



good idea!

"ESCALATE" MATERIALS FLOOR-TO-FLOOR with an ARR-O-VEYOR power belt unit. Moves the goods smoothly, continuously — up or down — saving space and time. Often replaces worn out elevators. Can be mounted horizontally, too, for a wide range of applications. Many lengths, widths, capacities. See your ARROW agent.

ANOTHER GOOD IDEA!

Take *all* your handling problems to an ARROW specialist. Here are just a few:

TUCSON, ARIZONA

L. J. Clarke & Company

LITTLE ROCK, ARK.

Alexander Rebuild. & Mfg. Co.

DENVER, COLORADO

Joe Coursey Equipment Co.

PEORIA, ILLINOIS

M. H. Equipment, Inc.

NEW ORLEANS, LA.

M. A. Hawkins

ST. LOUIS, MO.

Shipping Utilities, Inc.

NEWARK, N.J.

Newark Caster & Truck Co.

CINCINNATI, OHIO

Flow Equipment Co.

TOLEDO, OHIO

Cleveland Tramrail Toledo Co.

PITTSBURG, PA.

J. R. Fuller Company

NASHVILLE, TENN.

Shipping Room Supply Co.

HOUSTON, TEXAS

Mapp Caster & Truck Co.

SALT LAKE CITY, UTAH

Equipment Supply Co.



Full facts on all ARROW power and gravity conveyors. Write to:

arrow

PRODUCTS, INC.

208 Arrow Bldg. 417 Front, N.W. Grand Rapids, Mich.

Circle No. 13 on Reader Service Card

FLOW • AUGUST, 1954



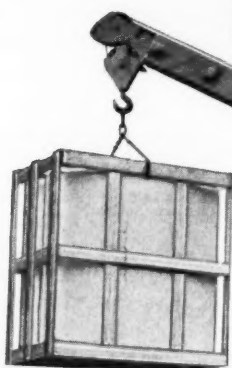
Hook... Clamshell... Magnet
Just like those you've seen a thousand times

BUT MAN!

wait till you see 'em become the
busy end of the amazing new



AUSTIN-WESTERN HYDRAULIC CRANE



It's the *machine* behind the *man* behind the *boom* behind the *hook* that counts. Put them all together in a way never done before, and you get performance never seen before. That, in a nutshell, is the story of "the crane designed with you in mind."

Models for every type of work and terrain. All with 4-wheel steer... some with 4-wheel drive... with torque converter... with 6-speed transmission... with hydraulic outriggers... with booms as long as 35 feet. The whole story makes mighty interesting reading.

COMPLETE HYDRAULIC BOOM OPERATION...

✓ **Reaches Far and High**
... changes boom length and boom angle quickly and easily while under load.

✓ **Raises and Lowers**
... picks up maximum loads, and transports them through low-clearance doors.

✓ **Rotates 360°**
... simplifies and speeds up many operations, especially when working in close quarters.



AUSTIN-WESTERN COMPANY

Construction Equipment Division • Baldwin-Lima-Hamilton Corporation

AURORA, ILLINOIS, U.S.A.

Power Graders • Motor Sweepers

Road Rollers • Hydraulic Cranes

AUSTIN-WESTERN COMPANY

620 Farnsworth Avenue, Aurora, Illinois

Please send complete information and literature on the Austin-Western Hydraulic Crane.

Name _____
Title _____
Company _____
Street _____
City _____ Zone _____ State _____

Circle No. 156 on Reader Service Card for more information

*Pays for itself in
Less than 100 days*



FRIED Stripveyor
Patented
makes sheet handling
wholly mechanical

Automatically picks up cut strips, conveys them beyond shear bed. Makes shear 100% efficient. Adjustable to any height up to 45"—synchronous to shear speed—handles any gauge sheet up to 3/8", widths as wide as allowable by standard 20" back gauge, lengths to size of shear. Portable! Caster-supported carriage supplied with floor locks.

SHEAR TO .005"

FRIED Liftveyor
Patented

Enables clean-cut wide shearing to .005" regardless of material. Eliminates flexing—supports sheet from underside while sheet edge is against back gauge—then conveys it beyond shear frame. For sheet or plate up to 3/8" thick.



For complete strip handling convenience add FRIED Strip-Stacker to Liftveyor or Stripveyor. Write for full details today!

FRIED STEEL EQUIPMENT MFG. CORP.
528 EAST 119th ST. NEW YORK 35, N. Y.

VERSATILE BULK FEEDING...

from a trickle to a torrent with **VELOFEEDER**

A mechanical vibrating feeder especially designed for all materials such as sugar, bran, pellets, feeds, chemicals, and grains at lower cost, higher efficiency.

Here's Why!

Higher Output—300 to 50,000 lb./hr. hard granular materials; 300 to 30,000 lb./hr. soft ground materials.

Lower Power Needs—1/8 hp. motor powers unit—inexpensive as a 100-watt light bulb!

Smaller Space Needs—35 inches long, 17 1/2 inches wide, 19 inches high. Standard vibrating tray 16 inches wide—stainless steel when required.

Easier Control—simple adjustment over wide operating range (near 0 to 50 fpm. max.).

Safer Operation—motor is explosion-proof (Class 2, Group G), where hazardous conditions exist, at slight extra cost. Complete dust enclosure on application.

Less Vibration—working frequency is 1850 vibrations per minute; little or no vibration is transmitted to mounting installation (mounts with only 4 bolts!).



If you're interested in better bulk feeding at lower operating cost, write for Bulletin 5302 with complete specifications and drawing.

Richardson SCALE COMPANY, Clifton, New Jersey

Atlanta • Boston • Buffalo • Chicago • Detroit • Houston • Memphis • Minneapolis
New York • Omaha • Philadelphia • Pittsburgh • San Francisco • Wichita • Montreal
Toronto • Havana • Mexico City • San Juan

MATERIALS HANDLING BY WEIGHT SINCE 1902

Circle No. 142 on Reader Service Card for more information

AD LITERATURE

Continued

Tire and Wheel Analysis:
Free examination of material handling operations as they are affected by tires and wheels will be made by a trained B. F. Goodrich man. He advises which type and size tires, what tread design and compound will do best in a given application. Write for the service, which comes without obligation.

Circle 66 on Reader Service Card

Pneumatic Tired Trucks:
Trailer No. 3003, 36 in. wide, 96 in. long, 27 in. high, has—among other specifications—capacity of 6000 lbs., fifth wheel construction, and pneumatic tires. For full details on this or other industrial trucks and trailers, write to the manufacturer—The Ohio Galvanizing & Mfg. Co.

Circle 106 on Reader Service Card

Power Travel for Hoists:
Detroit Hoist & Machine Co. has produced the Trojan Tractor Bulletin 810, detailing how the equipment quickly converts existing hoists and light overhead cranes into faster, power-travelling units.

Circle 46 on Reader Service Card

Magnesium Bridge Ramps:
Advantages, features and capacities of magnesium ramps produced by Bronco Products Co. are described in information covering the firm's complete line.

Circle 150 on Reader Service Card

Crane Catalogs: Three illustrated, comprehensive catalogs are offered by Bay City Shovels, Inc., on the firm's line of crawler machines 1/2 yard up, Crane-Mobiles and Crane Wagons to 25 ton capacity. Featured is information to help speed yard handling operations.

Circle 22 on Reader Service Card



Traveloader cuts "man-handling" by 75% for Superior Separator Company

Superior Separator Company of Hopkins, Minnesota, manufacturer of nationally-known "Farmhand" handling products for agriculture, learned how non-productive manpower could be released for profit-making work. TRAVELOADER and two men are doing more work than was formerly accomplished with eight men and three machines! Superior Separator is one of the country's largest users of seamless tubing, and large stocks of tubing and other raw materials are efficiently handled from storage yard to plant with the TRAVELOADER.

Before TRAVELOADER, a mobile crane, a fork truck, and trailer wagons plus a labor force of eight men, brought materials from storage yard to loading dock for delivery to production departments. Now, only two men and one TRAVELOADER do the whole job ... and do it better!

Not only has TRAVELOADER been used for handling raw materials ... tubing, structural steel, and plywood ... but, for the handling of delicate welding jigs which are stored outside when not in use. The previous

method of handling caused damage to welding jigs and other materials ... a costly unnecessary expense has been eliminated because TRAVELOADER lifts, carries, and unloads gently and securely.

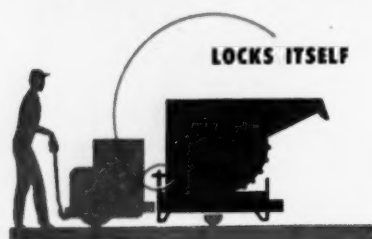
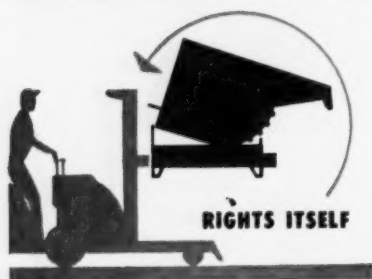
"TRAVELOADER is the finest single piece of materials handling equipment I have ever worked with" says Mr. Russell Wolf, Factory Manager at Superior. And he knows materials handling equipment because his firm builds these products for farm use.

Write for Bulletin 1360. It completely describes the remarkable TRAVELOADER that carries like a straddle truck, delivers like a road truck, and stacks like a fork truck. The Baker-Raulang Company, 1219 West 80th Street, Cleveland 2, Ohio.

Baker.

industrial trucks

Circle No. 154 on Reader Service Card for more information



makes every truck a dump truck!

Fits securely on any standard fork or platform lift truck . . . can't slip off. Pick-up is quick and easy. Insures fast, efficient handling of any wet or dry, hot or cold bulk materials. Cuts hand unloading by at least 50% . . . with maximum safety.

This rugged Roura Self-Dumping Hopper is built like a battleship . . . extra heavy gauge welded construction . . . to withstand the terrific knocks and bangs of rough usage. Good for years of dependable service. Available in sizes from $\frac{1}{2}$ to 2 cubic yards.

Thousands of these time-and-money-savers are now in use by America's biggest industries. Let us show you how they can help cut your costs, too.

ROURA Self-Dumping HOPPER

HERE . . . is the easy way to get full details about Roura Self-Dumping Hoppers. Just clip this coupon to your letterhead . . . sign your name . . . and mail to . . .

ROURA IRON WORKS, INC.
1411 Woodland Ave., Detroit 11, Michigan

Circle No. 117 on Reader Service Card
60

AD LITERATURE

Continued

Door-To-Door Efficiency: Economies to be gained from the use of the Go-Getter line of lift trucks (produced by Revolver Co.) will be described for those who write for the facts. The equipment is recommended for door-to-door plant and warehouse handling efficiency.

Circle 147 on Reader Service Card

New Roll for Old Trucks: For easier, more economical handling, The Colson Corporation recommends that old hand trucks can be given new efficiency by replacing worn-out, obsolete casters. There are some 1500 models in the firm's catalog, and the ones to suit given needs will be recommended upon reader request.

Circle 40 on Reader Service Card

Heavy-duty Fork Truck: Torque converter drive, now available on Gerlinger fork lift trucks, will pay off in reduced maintenance due to smooth acceleration and cushioned engine operation. For full information, send for the latest catalog of Gerlinger Carrier Co.

Circle 64 on Reader Service Card

Four Ways to Cut Costs: Hydraulic tail gates produced by Anthony Company for highway trucks offer four avenues of cost reduction—elimination of merchandise damage, faster loading, faster unloading, reduced standing time. For full data, write for a new, illustrated brochure.

Circle 10 on Reader Service Card

Bale Maker: The scrap baler of Allied Steel and Conveyors, Inc., makes compact, uniform bales of strip shearings and stringy scrap. A request will bring details on this complete, self-contained unit.

Circle 145 on Reader Service Card

THIS IS THE 2-WAY

Bendix "MULTI-MASTER"

**The Mobile
Radio With
A Thousand
Uses!**



- The Bendix "Multi-Master" can be used as a fixed station.
- It can be used as a mobile unit.
- True adjacent channel operation in 152-174 Mc. band.
- Available in either AC or DC current.
- It is available from 2½ to 35 watt output.
- Pull up . . . pull out . . . or pivot for easier servicing.
- It can be transported from one location to another.
- Wide band adjacent channel service or split channel service in 25-50 Mc. band.

The Bendix* Multi-Master incorporates all the new and outstanding features of Bendix 2-way radio. It has range and power. Static free reception. Longer life components. Low power drain.

Bendix offers a complete line of accessories from hand sets to speakers, antenna to shock mounts . . . plus all technical help in obtaining license and complete system engineering.

It costs no more to own the best . . . so look at Bendix Radio before you buy. Write today to the address below.

Bendix Radio

**DIVISION OF BENDIX AVIATION CORPORATION
BALTIMORE 4, MARYLAND**

Export Sales: Bendix International Division,
205 E. 42nd St., New York 17, N. Y., U. S. A.
West Coast Sales: 10500 Magnolia Blvd.
North Hollywood, California

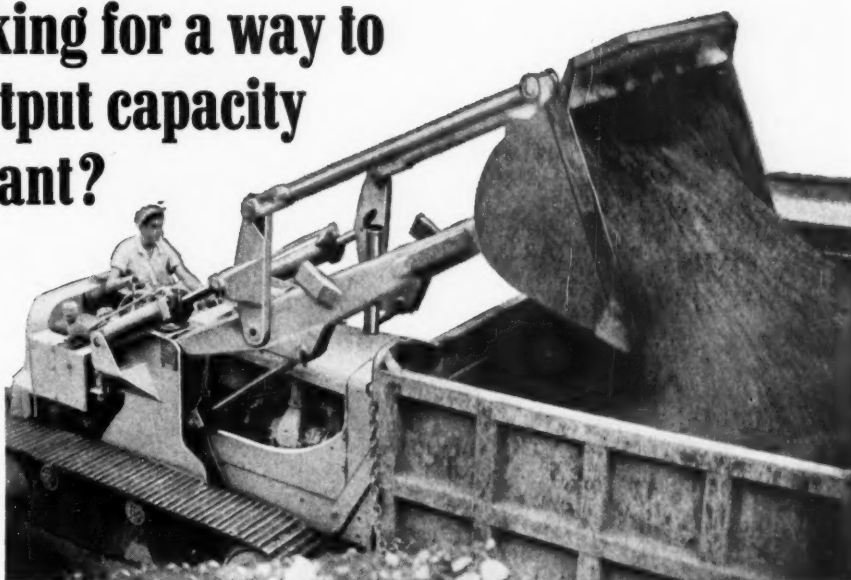
Canadian Distributor: Aviation Electric, Ltd.,
200 Laurentian Blvd., Montreal, Quebec

Circle No. 23 on Reader Service Card
FLOW • AUGUST, 1954

MR. PRODUCTION MANAGER:

are you looking for a way to
feed more output capacity
into your plant?

This Allis-Chalmers HD-9G Tractor Shovel might well be the answer. It offers the same outstanding versatility and performing ability as the 1-yd. HD-5G—the recognized standard of comparison—plus bigger capacity, higher reach and more power. With the HD-9G, one man can move more material per shift . . . handle a wider variety of jobs inside and out.

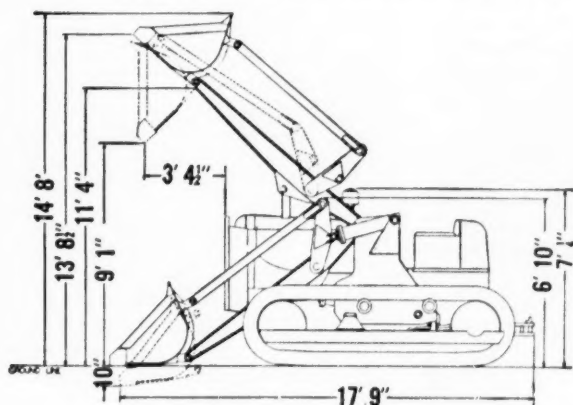


LOADS FAST WITH BIG TWO-YARD BUCKET

The HD-9G digs, stockpiles, loads trucks, feeds hoppers—handles any bulk material two big yards at a scoop. Special 3½-yd. light materials bucket almost doubles output in materials weighing not more than 1400 lb. per cu. yd. Exclusive Allis-Chalmers shift pattern further speeds loading by allowing operator to go from low forward to fast reverse with one simple gear shift.

HIGH DUMPING HEIGHT — 11 FT. 4 IN. UNDER BUCKET HINGE

Here is a Tractor Shovel that reaches for extra jobs. With bucket fully raised, it dumps into high bins. Also, tractor can work right up on storage piles, making it possible to put many more yards of material in a given area.



OVERALL WIDTH, 7' 11¼"

Ask your Allis-Chalmers dealer to show you the many ways this HD-9G has helped others step up production.



WORKS IN CLOSE QUARTERS — NO BULKY SUPERSTRUCTURE

Compact design, plus the ability to turn in its own track length, enables the HD-9G to work in confined areas or where there is little more than tractor-height headroom.



POWERFUL — 72 DRAWBAR HP.

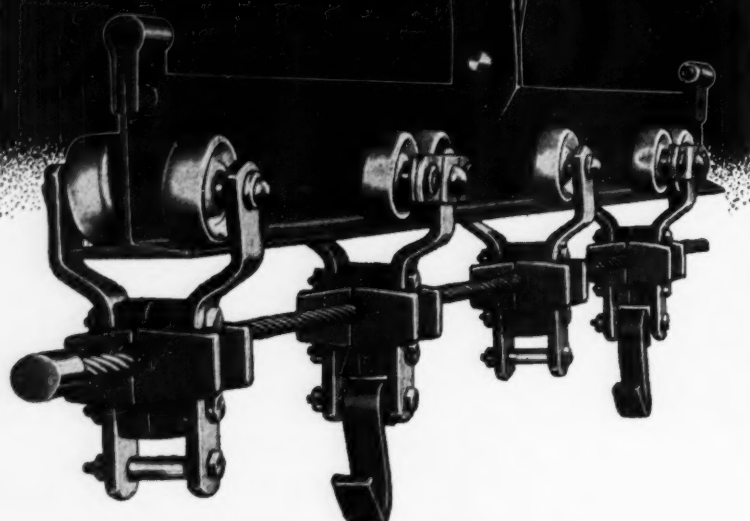
The HD-9G has the power, weight and traction to handle tough excavating on new construction, maintain yard roads and parking lots, spot railroad cars, lift, carry, push or pull heavy loads of all kinds.

ALLIS-CHALMERS

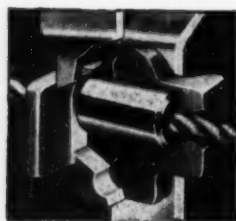
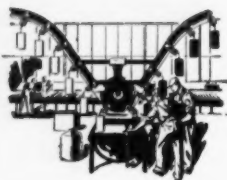
TRACTOR DIVISION — MILWAUKEE 1, U. S. A.

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MEET THE WORLD'S Newest CABLE CONVEYOR.



"Bush-Lock" by Buschman



Patented BUSH-LOCK design permits fast, easy installation, revision and maintenance of systems.

C-151-EWB



Here is a tried, proven, accepted conveyor whose patented design gives 30 times greater cable life . . . enables user to stock standard lengths of cable for fast easy maintenance, revision or expansion of installations . . . facilitates lubrication to protect against acid, moisture and other deteriorating factors . . . provides for increased range of applications.

BUSH-LOCK Cable Conveyors feature cylindrical bushings immovably locked to cable on accurate centers by high pressure swaging. Two halves of an adaptor block, to which trolleys and load-bearing hook attach, are bolted around the bushing. Rotary floating action of bushing in wide radius adaptor block assures constant alignment of trolley, eliminates binding of cable at flexure points.

New BUSH-LOCK Cable Conveyor is available in $\frac{1}{4}$ " and $\frac{3}{8}$ " sizes for transporting parts through cleaning, drying, painting and progressive assembly operations or as overhead storage banks. Because short radius horizontal and vertical curves, more compact layout is possible, conserving valuable space.

Both $\frac{1}{4}$ " and $\frac{3}{8}$ " BUSH-LOCK Cable Conveyors will operate on existing Buschman Snub-Lock design systems.

Write for complete details today



THE E. W. BUSCHMAN COMPANY

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Complete Conveyor Systems For All Types of Industries • Engineered • Manufactured • Installed
Representatives in Principal Cities

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AD LITERATURE

Continued

High Capacity Handling: A new, free bulletin, No. 77, has been produced by Silent Hoist & Crane Co. to illustrate and describe the advantages of the Liftruk, heavy duty fork truck which comes in capacities from 5 to 15 tons.

Circle 119 on Reader Service Card

Moving Bulk: Handling materials from grain to lump size is the function of the Flo-Tube, spiral screw conveyor built by Canton Stoker Corp. for automatic and semi-automatic bulk handling. Full specifications and details are available.

Circle 148 on Reader Service Card

Power Sweeping: Equipment to keep a plant or warehouse clean and dust-free can be manually operated or motorized, will handle some 50,000 square feet per hour. The manufacturer, Parker Sweeper Co., will send you complete information or arrange for a free demonstration.

Circle 108 on Reader Service Card

Steel Storage: One-man operation in handling and storing steel shapes is the purpose of heavy duty bar racks produced by Palmer-Shile Co. The design permits selection from any rack without disturbing tiers. Any capacity and length of stock can be accommodated. Complete details are offered.

Circle 87 on Reader Service Card

Bucket-Loader Truck: Working in cramped quarters—as in unloading box cars—is a specialty of the Auto-Scoop, product of Jaeger Machine Co. Performance characteristics, including tight turning radius, two fast forward and two fast reverse speeds, will be provided in full by the manufacturer.

Circle 76 on Reader Service Card

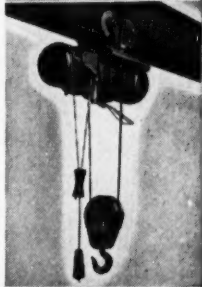
P&H Zip-Lift Electric Hoist (Pushbutton control)

Handy little power-house for loads from 250 pounds up to one ton. Versatile — in use in metal shops, dairies, hospitals, bakeries. Solves your load-handling problem within the weight limits specified. Plenty of literature available for more detailed information. Ask for it.



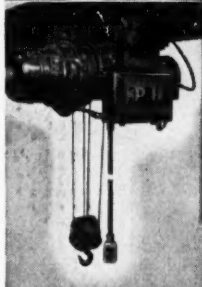
P&H Zip-Lift Electric Hoist (Rope Control)

You can do anything with the two rope controlled models that you can with the Pushbutton Zip-Lift. The less expensive rope control gives you a break on price — doesn't cut down the number of jobs you can perform. You get years of trouble-free service at an extremely reasonable initial cash outlay.



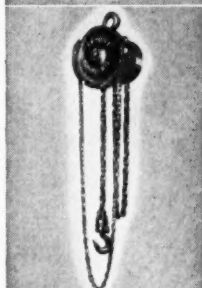
P&H Hevi-Lift

For heavy loads — and your own particular problem. The Hevi-Lift is a custom-built hoist — manufactured to your specifications. Over 3,000,000 variations possible on this husky load-handler. You're sure to find the right combination for you. Take a look at the literature available — then see your P&H distributor for a concrete solution.



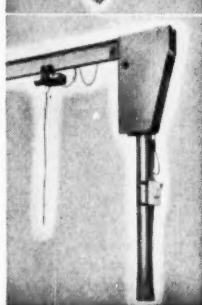
P&H Hand Chain Hoists

Perhaps you're in the market for a hand chain hoist; rather than wire-rope. If you are, you'll have to look far to find a better value than these P&H work-horses. Handle up to 25 tons easy as pie. Spur-gear; Timken or roller bearing trolleys; Army-Type trolleys — whatever you need. Ask for literature on the complete line.



P&H Jib Cranes

Hang your hoist on a P&H Jib Crane — then you've got a dependable one-two combination working for you. Eight different models — bracket-type, mast-type and pillar-type. Capacities up to 12,000 pounds. Use the coupon for fast return of literature on the complete P&H Line.



This coupon gets you complete information on the P&H Hoist Line. ➔

P&H HOISTS

HARNISCHFEGER CORPORATION

4643 W. National Ave. • Milwaukee 46, Wis.

Save just three minutes per shift!

... pay the operation cost of a handy, rugged,

P&H Zip-Lift Hoist



Not three minutes per man ... three minutes per shift!

THAT'S the experience reported by Evinrude Motors of Milwaukee, Wisconsin, world-famous manufacturers of outboard motors.

Here's how they explain it:

"A piece of labor-saving equipment which has played an important part in saving time and relieving our workers of repetitive lifting is the P&H Zip-Lift Hoist. We use 11 Zip-Lift Hoists in various testing, experimental and shipping rooms, in processing departments and on the loading platform. In every position they lessen the fatigue of the men and contribute to the high quality of our product.

"Surprising as it may seem, cost analysis shows that a P&H Zip-Lift Hoist of 500-pound capacity costs less than 18¢ a day to operate on two shifts. This unit makes it unnecessary for a second tester, for instance, to lend a hand in lifting a 15-hp or a 25-hp motor. Since each man earns better than 3¢ a minute, the saving of 6 minutes of lifting time in 12 hours pays for the day's operating cost, and the rest of the time is net gain ..."

Want more proof? Then send for the complete story on how Evinrude utilizes these strain-saving hoists. Use the handy coupon below for prompt reply.

P&H Hoists

HARNISCHFEGER CORPORATION

4643 West National Ave., Milwaukee 46, Wisconsin

Gentlemen: Please send me the story on how Evinrude pays for its P&H Hoists by saving only three minutes per shift! I'm also interested in information on other P&H models checked: P&H Zip-Lift, Pushbutton Control ☐, P&H Zip-Lift, Rope Control ☐, P&H HeviLift ☐, P&H Hand Chain Hoists ☐, P&H Jib Cranes ☐.

Name.....Title.....

Company.....

Address.....

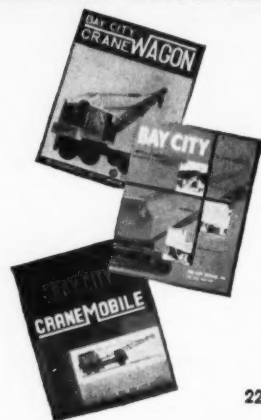
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For greatest efficiency in handling heavy, bulky and odd-shaped materials in yards, the BAY CITY CraneWagon is ideal. It is a self-propelled, rubber-tired crane that works with speed and precision. Independent boom hoist operation provides exceptional flexibility. For instance, the boom hoist will boom-up or boom-down with load and under power only, while the CraneWagon is hoisting, swinging or travelling. That's one way to speed yard handling as illustrated here where the CraneWagon is loading bundles of sucker rods at the Emsco Derrick & Equipment yard in Los Angeles. Why not start speeding your yard handling operations by asking for complete information about BAY CITY Cranes. See your nearest BAY CITY dealer or write for catalog. BAY CITY SHOVELS, INC., BAY CITY, MICHIGAN.



224

Write for any of these catalogs—Crawler machines ½ yard up; Crane-Mobiles and CraneWagons of 12½, 20 and 25 ton capacity—They are yours for the asking.

BAY CITY



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to help solve
your problems

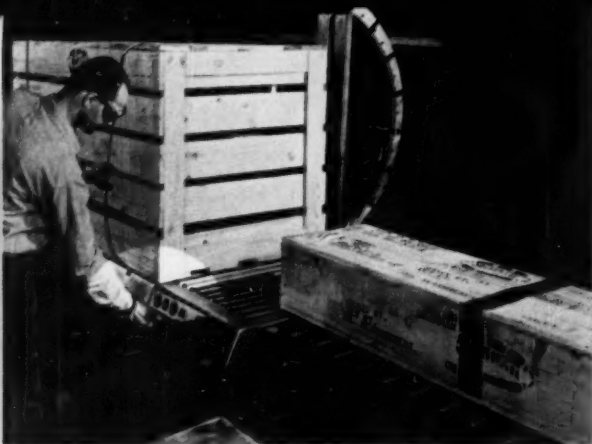
ACME STEEL IDEAS

Acme Steel Strapping and Wire Stitching Ideas are yours for the asking

You may ship across town or across oceans. The number of miles or the rigors of transportation make little difference when products are properly secured for safe arrival with Acme Steel Strapping and when cartons are closed with Acme Steel Wire Stitching. And just as important to shipper and receiver—Acme Steel's engineered methods reduce costs by saving time and dollars through simplifications of materials handling.

Acme Idea Men are experienced in solving every kind of packaging problem. They are available at your request to show you in your own plant how modern Acme Steel Strapping or Wire Stitching methods can improve your shipping operations and save you money.

**ACME
STEEL**



Idea #419—A centralized Acme Steel Strapping Machine (automatically tensioning, cutting and welding the strapping) maintains the flow of all sizes of containers at the Chrysler Corp. plant, Marysville, Mich.

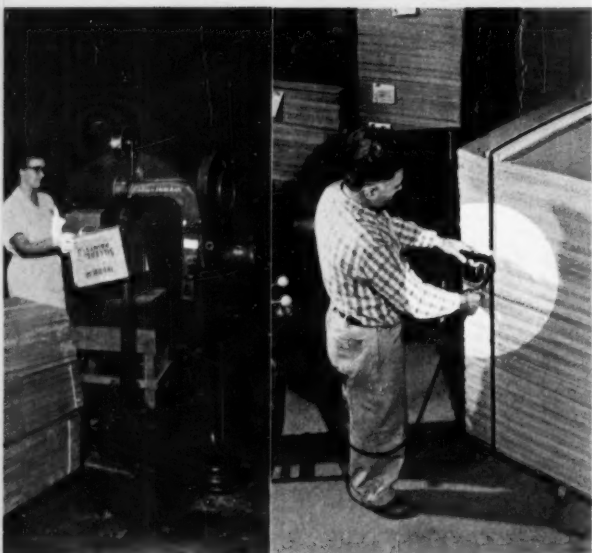
AIM for

modernization

of your packaging

and shipping methods

with Acme Steel Ideas



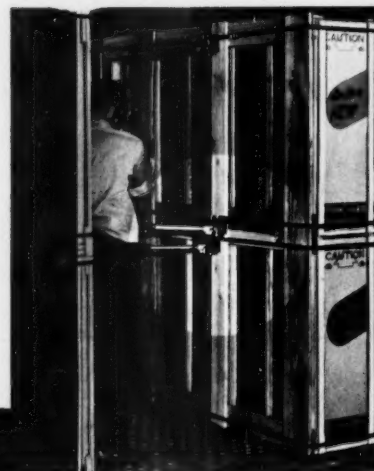
Idea #425—Sillers Paint & Varnish Co., Los Angeles is using an Acme Steel Silverstitcher to speed the assembly of cartons.

Idea #423—An Acme Steel Pneumatic Stretcher secures sheets of binder's board at The Davey Company, Jersey City, N. J.

Idea #412—Loading time and dunnage costs are reduced, freight costs are lower at Thor Corporation, Chicago, where Acme Steel's "floating load" method is used for carload bracing of appliances.

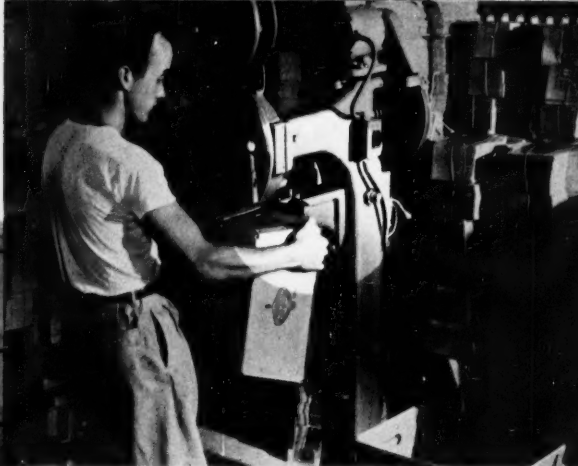
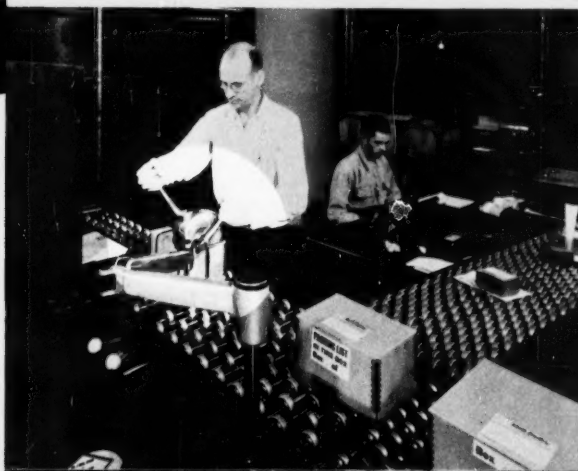


Idea #414—Modern conveyors and an Acme Steel Pneumatic Stretcher have reduced unitizing time by 25%, cut labor costs by 25%, and increased storage by 90%, at Morris P. Kirk & Sons, Los Angeles, California.



Idea #415—Piece-by-piece handling has been eliminated at Brooks Lumber Co., Bellingham, Wash., by bundling wood products, then bracing in carload units with Acme Steel Strapping.

Idea #416—A 400% increase in packaging capacity has occurred at Firth Sterling, Inc., Pittsburgh where a centralized Acme Steelstrapper maintains the flow of shipments—at lower cost.



Idea #418—Lightweight, durable fibreboard tote boxes are in volume production at Tressel Box Stitching Co., Azusa, Cal., thanks to Acme Steel Arcuate Wire Stitching method.

ask your **Acme Idea Man**
to apply these ideas to your
shipping problems . . .

- Idea #414**—Use of pneumatic stretcher for strapping palletized ingots.
- Idea #113**—Strapping dies for paperboard cartons
- Idea #126**—End stack bracing for carload shipments of case goods
- Idea #411**—Self-palletizing of brick
- Idea #124**—Strapping regular slotted containers, end flaps folded last
- Idea #115**—Bundling glazed storm windows
- Idea #410**—Strapping compressed bundles of textiles
- Idea #130**—Bundling mounted tires for export
- Idea #122**—Carload bracing of empty cable reels
- Idea #407**—Palletizing fibreboard
- Idea #128**—Reinforcement of wood pallets
- Idea #104**—Palletizing and carloading wax slabs
- Idea #415**—Strapping formed, wood pipe staves in carload shipments
- Idea #401**—Unitizing lumber for retail delivery
- Idea #105**—Palletizing and carload bracing multipacks of television tubes
- Idea #111**—Bundling solid fibre newsprint cores
- Idea #108**—Skid loading cellophane rolls in carton
- Idea #107**—Carload bracing coiled copper rod
- Idea #408**—Packaging of impregnated pipe
- Idea #133**—Tying protective wrappings to oxygen cylinders
- Idea #109**—Bundling and truck loading bee hives
- Idea #110**—Strapping rubber onto skids, into palletless units, and carloads
- Idea #402**—Strapping rolls of tire cord fabric for overseas shipping
- Idea #418**—Wire stitching of fibreboard tote boxes
- Idea #112**—Strapping foundry flasks into bundles
- Idea #409**—Strapping concrete pipe on flat cars
- Idea #131**—Bundling refractory brick for palletless shipment
- Idea #123**—Self-palletizing unit of concrete block
- Idea #416**—Production-line strapping of cartons
- Idea #129**—Skid loading printed material
- Idea #125**—Reinforcement of crates for five-gallon water bottles
- Idea #403**—Assembling and stitching various size cartons
- Idea #127**—Carloading mixed shipment of kegs and cases of beer
- Idea #417**—Unitizing heavy, shaped timbers

the **Acme Idea Man**

Ask your
Acme Idea Man
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your problems



is your source
for complete data on
modern shipping and
packaging methods

Acme Steel Company experience in problem-solving reaches into an endless number of applications of steel strapping and wire stitching. This knowledge, coupled with modern Acme Steel Strapping Tools and Wire Stitching Machines, is available through the nearest Acme Idea Man. Now is the time to put him to work for you.

the **AIM** of your **Acme Idea Man**
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ANALYZING your present packaging and shipping methods in line with modern systems that save costs and assure safe arrival.

DEMONSTRATING in your plant the type of strapping and strapping tools best suited for your own products, your plant, your needs.

RECOMMENDING in specific terms the packaging or shipping methods that will provide the greatest savings to you and your customers.

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Please send me further information on Acme Steel's Safe, Lower-Cost Shipping Methods. I am interested in ☐ Steel Strapping; ☐ Wire Stitching; ☐ having an Acme Idea Man call on me.

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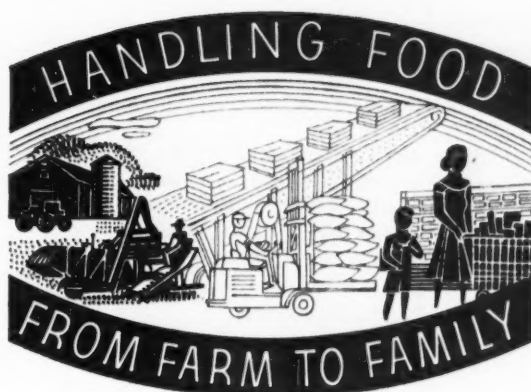
AIM FOR SAFE,
LOWER-COST SHIPPING AND
PACKAGING WITH ACME
STEEL STRAPPING AND
WIRE STITCHING IDEAS—
MAIL THE COUPON TODAY!

**ACME
STEEL**

PRINCIPLES of easier, faster and less costly handling which were developed primarily in manufacturing plants are now being applied to all phases of food production and distribution.

This series of articles is intended to show some of the latest concepts in the handling of food products as they progress from the raw state, through processing, and are finally made ready for distribution to the ultimate consumer.

And, it is highly possible that many of the new principles described here may be "borrowed" in return by many firms in heavier industries.



Mechanized Handling From Harvest to Processing

ONLY A FEW years ago, there was no man-power problem to speak of at harvest time. Itinerant and part-time hands made it possible for the farmer, large and small, to line up a crew for work when the crop was ripe.

Today, itinerant workers are no longer plentiful—have disappeared entirely in some areas—and both they and part-time helpers require more pay. Man-power shortages are felt, sometimes severely, at harvest time. Since harvests can't wait, it has become the responsibility of material handling engineers to provide the means to speed crops from the fields into warehouses and processing plants. Some outstanding examples have been gathered to illustrate what is and can be done when handling on the farm is engineered.

Grain Handling Costs Cut Two-Thirds

A new and rapid method of gathering grain has made it possible to minimize need for extra labor and

to speed operations—saving about two-thirds the cost of older, conventional methods. It enables the farmer to eliminate most outside labor and get along very well with the help of Mrs. Farmer and the children. The system was developed by the feed and seed firm, Burlingham Meeker Company, Shedd, Oregon, working with local material handling sales engineers. Employment of the conventional combine requires a tractor operator and a sack sower, who dumps sacks, in lots of four, on the ground. These then have to be loaded onto a truck (by two or three men) and hauled to the warehouse (by a truck driver) where they are put into storage, rehandled, opened, and re-used. There has been breakage in storage, spilled grain, and contamination.

The new handling system was devised to benefit the farmer, warehouseman, and processor. It employs as the basic container a wood box 4 feet wide, 6 feet long,

(More on next page)



LOADING GRAIN BOXES at one corner of field in new system which has eliminated need for sacker and bag handlers, greatly speeded deliveries to storage.



AT WAREHOUSE, fork truck moves full boxes into storage, loads empties onto farmer's truck for return trip. Boxes hold 2800 lbs. of grain, stack empty or full.

Mechanized Handling from Harvest to Processing

Continued

and 3½ feet high (including the pallet spacer beneath). The box holds 2800 pounds of grain, is tight, inexpensive, and can be stacked empty or filled.

Here is how one farmer uses the system:

With the grain ripe and the weather right, his son and wife go to the warehouse with his big truck and pick-up with trailer, respectively, to obtain boxes.

When the empty boxes arrive, he places the two truck loads at opposite corners of the field. This arrangement allows the hopper of the combine to become full enough to justify each unloading stop.

When boxes are filled with grain, they are transported to the warehouse, where a fork truck handles and stacks them into storage.

The complete cycle—unloading, stacking, reloading the truck with empty boxes—takes approximately 30 minutes per 22,400 pound truck load.

Each lot is marked with the weight, the producer's name, and a record is made. Grain is held in storage in the boxes until it is ready for cleaning and grading. To start these operations, boxes are dumped into a hopper. This feeds the bucket elevator and conveyor system, which handles the grain through processing, cleaning and sacking. A fork truck places full boxes in an automatic dumping device above the hopper, and removes empties after dumping.

Eight Containers Per Load

With this system, then, eight boxes are handled quickly and mechanically to unload material formerly carried in 224 bags, which required manual handling. In the three years it has been in operation, the equipment has reduced handling costs to about a third of the former level, and the saving has been divided equally between farmer and warehouse operator.

Aside from the direct money economies made possible with it, the system allows the construction of simple warehouses with large capacity cube areas to handle small shipments from many producers.



ABOVE PORTABLE HOPPER is automatic dumper in which fork truck places box. Hopper feeds bucket elevator & conveyor system for processing & sacking.

FLOW acknowledges with thanks contributions to this section by these authors and firms:

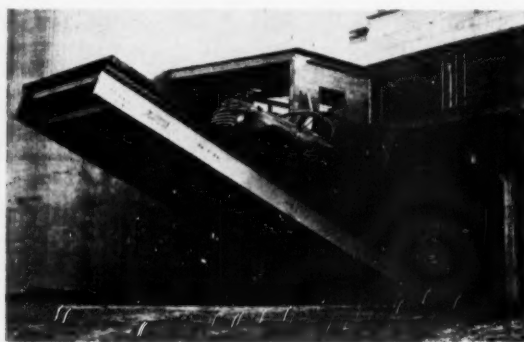
Matthew W. Potts; L. G. Weller, Manager, Airveyor Div., Fuller Co.; Harvey A. Scheel, Director of Engineering, Green Giant Co.; Webb Kingsbury, Superintendent of Mechanical Cargo Handling Equipment, United Fruit Co.; and the Rubber Chemicals Division, E. I. du Pont, de Nemours & Co.



"Automatic" Elevator Profits Farmers

ALMOST on the other side of the country, a "one-man" operated grain elevator with a continuous flow system has boosted farmers' returns by some eight cents a bushel. It is the Anderson Truck Terminal, Maumee, Ohio. Now with a four million bushel capacity, the firm expects a grain turnover of 10 million bushels this year, with a saving of \$800,000—which will be passed along to some 11,000 patrons of the elevator as an inducement to stimulate trade over a 150-mile radius.

A huge, three-million-bushel-capacity addition includes four rows of silos, five to a row, each 168 feet high and 33 feet in diameter. This unusual arrange-



PNEUMATIC LIFT tilts 35 degrees and makes it possible to empty a 100,000 pound highway trailer in one minute. System handles 25,000 bushels per hour.

ment provides 186,000 more bushels of storage space than would a conventionally designed elevator with the same number of silos.

On top of the elevator is an owner-designed "turnhead", a fully conveyORIZED, automatic handling and filling system.

Flow of grain to this new turnhead is up a covered conveyor. It discharges by gravity onto a second, reversible belt conveyor, which rotates through 360 degrees on a standard railroad track. The turnhead consists of two concentric rings: the outer, 128 feet in diameter; the inner, 72 feet. Power to rotate the conveyor is provided by two 3 h. p. electric gear motors. The reversible conveyor feeds both outer and inner rings, moving in a given direction for each ring.

Spouts from these two turnhead rings lead to a total of 46 bins. All spout openings in the turnhead rings are kept closed by covers which revolve with the rotating conveyor. Thus, the turnhead rings are, in effect, a revolving cover.

A conventionally-designed elevator with two rows of ten silos each, would require a minimum of two men upstairs to: (a) Change spouts; (b) keep up housekeeping; and (c) take care of mechanical troubles. To obviate this latter necessity, there have been installed numerous electronic safety devices, some of which follow:

Bin level controls. Grain pushing up against a diaphragm switch located at the discharge end of the conveyor shuts off all inter-related equipment.

Motor controls. Electrical interlocks automatically shut down equipment in the event of a failure.

Belt protection. In the event of belt breakage, the tighter pulley drops, breaking a circuit which stops the machinery. If a belt gets off-center, it contacts one of a series of arms connected to a micro-switch, which shuts down the conveyor.



EXPLOSION PROOF system atop 3 million bushel storage unit includes lead-in conveyor, reversible conveyor, two concentric turnhead rings, and spouts leading to 46 bins. All operations are by remote control.

Turnhead Control By Remote Panels

Synchronized with the turnhead are four strategically located remote-control panels, each equipped with a selsyn device. Panels are located at ground level or below. When the operator looks at one, he sees a scaled, plan view of the elevator. The two black circles indicate the turnhead rings, while the pointer represents the reversible belt conveyor. Lines drawn from the rings to the bin numbers represent spouts. The panel also contains colored lights for each bin.

To fill any given bin, the operator starts the turnhead until the pointer shows the conveyor is at the desired spout. The conveyor then activates a micro-switch, and the panel light flashes on. These lights are electrically interlocked so that the conveyor must be running in the right direction to fill a bin at the proper station. Accuracy between panel and turnhead is within 1 degree; the system is virtually foolproof.

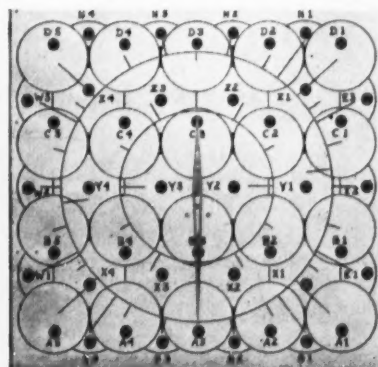
Temperature Teletyped

The "Hot Spot Detector System" enables management to know when, because of spontaneous heat development, it is necessary to shift stored grain. This system consists of 86 positioned cables which descend from the roof of the elevator into the grain. Attached to these cables are 21 thermocouples, spaced at 7 foot intervals. When a switch located in the inspection building is thrown, this system will automatically teletype the temperature reading at each thermocouple, providing a total of 1,806 readings. Elapsed time for this operation is 31 minutes. Temperature readings also register on a dial in the inspection building.

Fast Truck Unloading

Receipts are primarily by truck; during harvest season the elevator can handle 125 average truckloads per hour, or 25,000 bushels. First stop is the inspection building, where a probe sampler takes specimens of the grain for quality, moisture content, etc. Trucks

(More on next page)



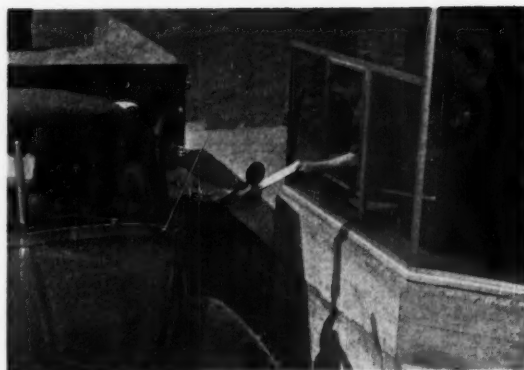
CONTROL panel on which concentric circles represent turnhead rings, pointer indicates reversible belt conveyor, lines from rings to bin numbers indicate spouts. Black dots are red lights, which are on when bin is filling.

Mechanized Handling from Harvest to Processing

Continued

next go to a 50,000 or a 100,000 pound capacity scale. Given their weigh slips, drivers are then routed to one of the 12 truck lifts—eight for dumping straight trucks and four for semi's.

Two of the 50-foot platform semi lifts can handle a 100,000 pound load in one minute. These discharge into a 15,000 bushel-per-hour leg, which can fill all but about 10 percent of the 4 million bushel elevator capacity. A control panel is located at this position; it is here that one man can handle the truck lifts and control the entire flow of grain to 60 bins having a 3½ million bushel capacity. The remaining 10 lifts discharge into a total of 33 underground bins having a capacity of 25,000 bushels. This truck dump unit is actually a "country elevator", where the trucks drive on "top" of the bins. Grain from these underground bins is transferred to the storage unit, by means of a 30 inch conveyor, at the rate of 10,000 bushels per hour.



AFTER INSPECTION drivers go to scale for printed weigh slip which forms basis for elevator's accounting system. Elevator can handle 125 truckloads per hour.

About half of the elevator's grain shipments are loaded into lake vessels. Spouts from the silo walls load 30 specially-designed hopper cars at the rate of 60,000 bushels per hour. The cars go by rail to a marine leg, some eight miles distant, on the Maumee River. Waiting ships are loaded at the rate of 15,000 bushels per hour.



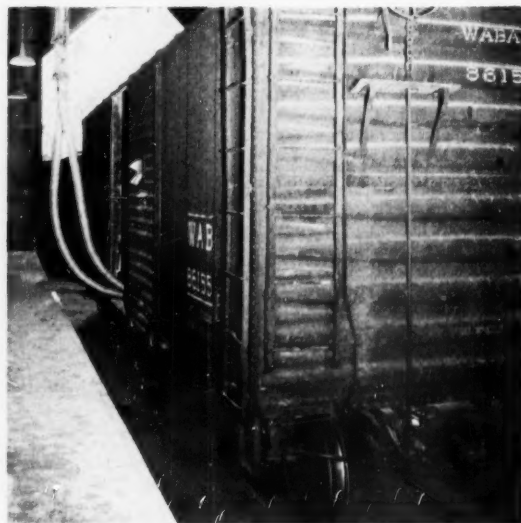
Pneumatic Handling Of Feed Ingredients

INCOMING animal feed ingredients are now received in bulk and pneumatically conveyed from freight car to storage at the Ralston Purina Company, Bloomington, Ill. Advantages gained by the use of the pneumatic handling system are: (1) cost savings, (2) minimized shrinkage, and (3) favorable labor relations through dust control and reduced manual effort.

The most important cost savings are in "bulking" ingredients formerly handled in bags. The system has virtually done away with bag costs and eliminated labor in handling and re-handling operations. Bag savings are estimated to be in the range of \$1.00-\$2.50 per ton and labor handling savings about 75 cents per ton. Shrinkage is very low because there are no broken bags and because dust is not blown away—

it is pneumatically collected along with the bulk of the ingredient.

In operation, cars left on the plant siding are pulled by winch and cable to the unloading station. Here, two pneumatic hoses equipped with pick-up nozzles are moved into the car.



FLEXIBLE metal hoses equipped with pick-up nozzles carry incoming feed ingredients to stationary lines of vacuum-type conveyor system at Ralston Purina.

These hoses connect with rigid pipe-lines leading to a receiving filter and exhauster.

The filter separates the solids from the airstream and delivers them through an airlock to a distribution system for transportation to various storage silos. The airstream continues to the exhauster and is discharged to the atmosphere.

Ingredients handled by the system include bran, meat scrap, corn germ, distillers grains, cottonseed meal, soybean meal, etc. The overall average rate of unloading is 25 tons per hour. The actual rate of unloading depends upon the physical characteristics of the ingredient. Unloading time varies from 1½ to 3 hours per car. One or two men may be employed, depending upon the speed at which it is desired to operate and upon the difficulty encountered in handling a particular commodity. Ralston generally uses two men, principally because the volume of incoming material requires cars to be unloaded as quickly as possible. (The Bloomington plant produces as much as 13,500 tons of chow monthly.)

Telescoping Line Reduces Delays

The men spot the car in position, open it, and move the nozzles inside as unloading progresses. Entering the car requires 10 to 20 percent of the total unloading time. With pneumatic unloading, the men merely position the nozzles and, at times, "break down" the more difficult ingredients for easier nozzle pick-up.

The first section of the rigid line, to which the flexible unloading hoses connect, is of a telescopic construction. This enables the hose to pull out as the men reach into the car. It avoids work stoppages, as for adding sections of hose, and increases efficiency by about 20 percent. The men merely advance the hose as they go, the telescoping section extending as unloading progresses. A switch located near the car

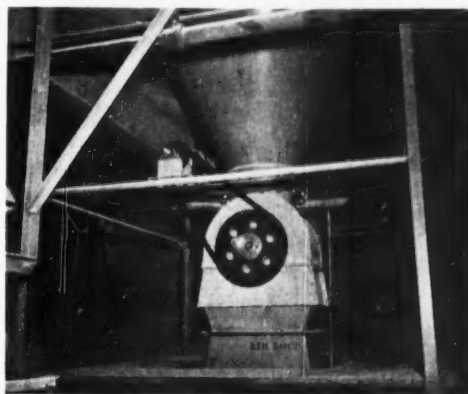
door operates a motor which advances and retracts the telescopic section as required.

"Folding" Hopper at Receiving Platform

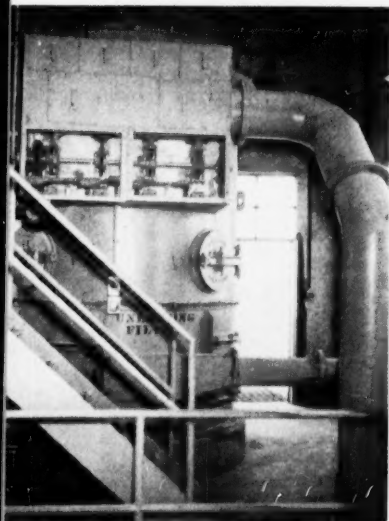
To expedite the handling of a small amount of bagged ingredients received at Bloomington, Ralston has installed a special hopper beneath the receiving platform. This hopper folds out at car door locations, and bags are opened at the car and emptied into the hopper. The pneumatic lines are lowered into the hopper to pick up the contents and deliver them to the filter as in the case of bulk material. Thus, once a bag is emptied, no further manual handling is required.

Although, at present, the system is used only for unloading freight cars, plans have been prepared to extend it so that screenings can be conveyed pneumatically from the elevator to the grinding mill.

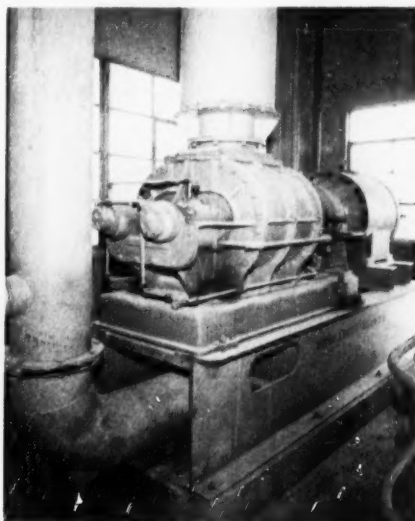
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ROTARY airlock through which filter discharges material into distribution system for delivery to bins.



LEFT: Filter where incoming material is separated from air stream. CENTER: Exhauster which creates air flow to move materials, discharges through muffler on top.



RIGHT: Bagged ingredients (about two percent of total shipped in) are emptied, directly at the car, into a hopper, handled pneumatically from that point on.



Control Of Crucial Canning Cycles

CANNING vegetables is a quality operation, and the time of harvest is crucial to the quality. Growth cycles of peas and corn, for example, are interrupted at the point where flavor and tenderness are at their best. Once the crop has been severed from the growing stalk or vine, the quality deteriorates rapidly. Speed from field to cannery, therefore, is one of great importance.

At Green Giant Company, LeSueur, Minn., the time from when pea vines are cut in the field until peas are in the can is scheduled at three hours. When you consider that the fields are, in some instances, 40 miles from the plant, you can realize that high-speed handling techniques are required to assure fine quality at the low price the consumer enjoys.

The pea and corn canning industry has been particularly resourceful in solving its handling problems. It has adapted all types of material handling equipment to reduce labor costs and increase speed of production. Possibly no other industry uses as many different types of conveying equipment as does the canning industry.

Starting with the harvesting of green crops—there

is a machine which cuts pea vines in a seven foot swath and places them on a cleated canvas conveyor which carries them aside to a windrow. There are lights on the machine for night harvesting operations.

Other equipment gathers the windrow from the field and elevates it, via canvas and wood slat conveyor, into a dump truck. Called a green crop loader, it is operated through fields at rates of 350-425 feet per minute (4 to 5 miles per hour). Vines are then delivered by the trucks to a vining station, where they are dumped and hand fed to an elevating conveyor which feeds to the pea thrasher. As peas are threshed from the pods they are picked up by a belt conveyor, transferred to a bucket conveyor, and fed through a chute into hopper trucks.

Hopper trucks are wheeled onto a motor truck bed and rushed to the canning plant, where the receiving platform is at truck platform height. Here peas are graded and enter the process part of the canning oper-



GREEN CROP LOADER, which gathers windrow (cut vines) and elevates it via canvas and wood slat conveyor into dump truck, travels at 4-5 miles per hour.



ELEVATING CONVEYORS at vining station feed pea vines at threshers. A three-hour cycle from field to can is maintained—even for crops grown 40 miles from the plant.



BUCKET ELEVATORS, loaded through gates in hopper truck bottoms, carry produce toward cleaning machine. Bucket empties as pin engages serrated end.

ation. Through sliding gates at the bottoms of hopper trucks, peas are discharged into bucket elevators which carry them to a cleaning machine. Serrated ends of buckets engage pins which cause them to turn over and empty themselves.

Peas Pumped Three Floors

The life blood of the canning plant is its water. Water is used for washing, cooling, and conveying. The canning industry uses a number of especially designed pumps, some of which are bladeless and can handle such items as whole carrots, beans, etc. At Green Giant, for example, peas are flumed to a pump which elevates them three floors to a blancher.

Until a few years ago, sweet corn for canning was picked by hand. Now, equipment picks corn and discharges it, via conveyor, into trucks which drive alongside the picker.

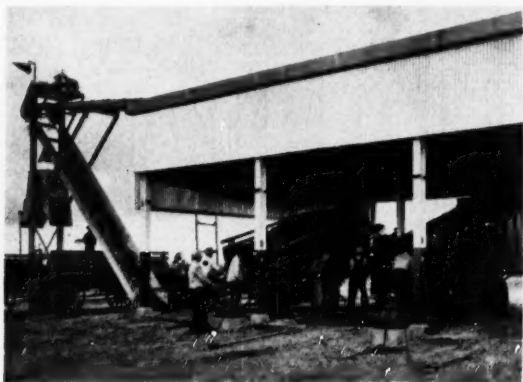
Before loading, a 4x4-inch bolster is placed on the truck bed, at the cab end, with a rope sling extending to the rear of the truck body. When a load arrives at



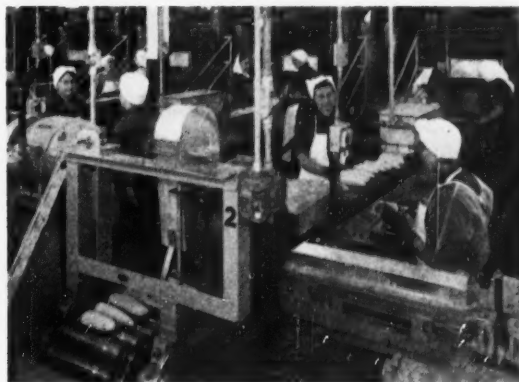
THRESHED from pods, peas are picked up by belt conveyor, discharged through chute into hopper trucks. Flight conveyor removes spent vines to silage stack.

the canning plant, the end gate is removed and the corn allowed to fall into a trench, where it is picked up by a chain and wood flight conveyor—and elevated either into the plant or into yard wagons for storage. As the corn is removed from the back end, the truck is gradually raised at the front end by an electric hoist. By hooking a rope through the sling in the truck body, and wrapping it around a capstan, the corn is gradually eased out of the truck and into the trench. (Capstans can be recognized as car movers.)

(More on next page)



TO UNLOAD corn, truck is hoisted by front end and corn eased out by pulling with car movers the bolster which was placed in the truck body prior to loading.



CHAIN AND ROLLER conveyor carries corn with tips all in one direction. As conveyor moves, rolls are livened by friction and ears turn for individual washing.

Mechanized Handling from Harvest to Processing

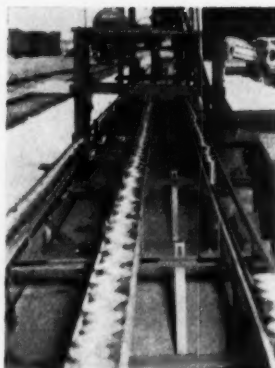
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After elevation into the plant, corn is dropped onto a rubber conveyor belt, from which it is distributed to hoppers by "brush-offs". A hopper holds about a ton of corn and provides a steady supply to operators. After corn has been husked, it is arranged on a chain and roller conveyor with tips pointing in one direction. As the conveyor moves from the husker through a washer, the rolls are livened by friction. The ear turns and is individually washed. Damaged ears are removed by inspectors, trimmed and returned to the conveyor, which drops the corn onto a smaller conveyor feeding directly to the cutter.

Cut corn is moved, by flanged belts 10 inches wide,



WAREHOUSED merchandise, palletized on expendable corrugated paper sheets with lip which, for loading, is held by blade of gripper-pusher-type truck.



TRAVELING AT high speed on cable runway, cans have been "forked" out of boxcar by multi-tined fork, sent into cable line through trough and twister.

from under the cutter to a flume and a pump for further handling.

The flanged belt is extensively used by Green Giant for carrying peas and corn. It is sanitary in that flanges keep the product on the belt. When supported with rollers and with clearances allowed between the flange and side rails, it can be easily cleaned and kept clean.

Cans Received on Cable

Probably the most unique material handling method in the canning industry is that with which empty and filled cans are handled at Green Giant. Most cans are received in a box car and manually lifted out by a giant fork having a great many tines, one for each can. After the fork handler places the cans in a trough, they roll through a twister and onto a high-speed cable conveyor line.

When cans have been filled and passed through the closing machine, they are carried to continuous cookers by similar cable lines, and again from the cooker to labeling and boxing machines. After cans are boxed, they pass through a case gluer and are shipped out to box cars—via roller and belt conveyors—or stacked in the warehouse, on expendable pallets, by fork truck.



High-Speed Handling of Perishables

ALTHOUGH designed expressly for the fast but gentle handling of bananas, a newly developed flight-cable conveyor system can be adapted for the safe handling of bags, boxes or almost any non-bulk commodity.

The equipment is called the "Curveyor", and it has been installed as part of the handling system in the new multi-million-dollar banana unloading terminal of United Fruit Company at Weehawken, N. J.

The name has been derived from the ease with which the equipment goes around corners. Essentially, this is possible because the conveyor comprises hundreds of individual pallets linked into an endless, flexible train riding on guide rails. Each pallet is a separate, three-wheeled carriage. Two of the rubber wheels engage U-shaped channels at the sides; a third runs between the rails centered under the pallets to prevent side-sway and provide horizontal curve steerage control. Cables join the pallets into a continuous chain, which can be curved, inclined or inverted in any way required. United Fruit's curveyor pallets measure 10x15 inches and are dished to cradle bunches of bananas as they go around turns or up grades. A neoprene pad

cushions each pallet. Shock mounts between pallet and carriage further protect the delicate commodity from any rough treatment.

The Weehawken Terminal has four of these conveyors. They average 1500 feet in length and operate at a normal speed of 240 feet per minute. (The inventor, Webb Kingsbury, calls the system a banana pump.) Tension in the system is limited by a pressure control switch so that any undue stress will cause the immediate stoppage of the line to prevent accident or damage. Each curveyor line is in a different color so that workers can distinguish them at a glance. As illustrations show, the equipment was developed to operate efficiently in the smallest possible space.

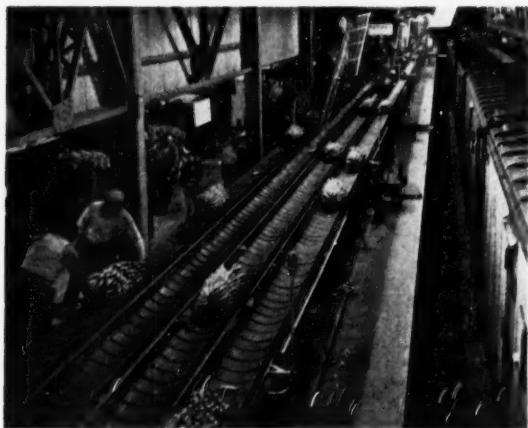
Gantry Conveyors Unload Holds

Operations actually begin at the ship, where four gantry cranes dip into the holds and are loaded manually by crews of stevedores. Cranes move along the apron between ship and track shed, and were designed so that two of them can operate simultaneously in the same hold. This is because the extreme fore and aft holds are usually smaller and will be empty sooner, after which the gantries can be doubled up in the two larger holds.

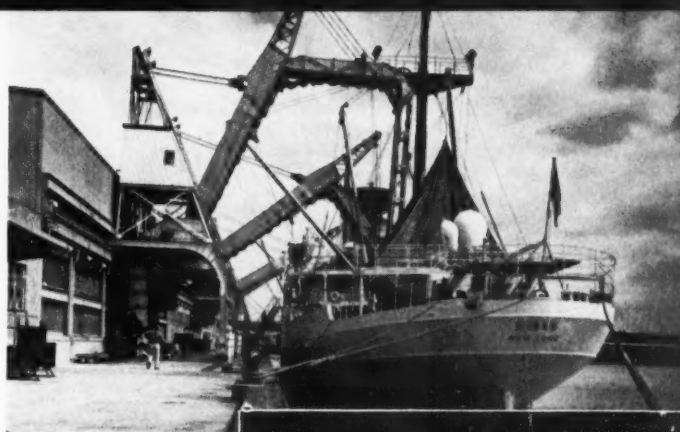
Incorporated in the cranes are vertical-pocket-type endless conveyor belts which lift the fruit from the ship's hold and deliver it to the curveyors. The rubberized-fabric belts are laced at intervals to horizontal bars which have been padded with neoprene sponge to reduce abrasion. Enough slack is left between bars to form deep festoons or packets.

The gantry cranes pour a continuous flow of stems onto the curveyor. As a safety measure, it was necessary to develop a system of bells to warn the men that the huge equipment was going into operation. Four seconds before the gantry and curveyor glide into motion, a bell rings as a warning.

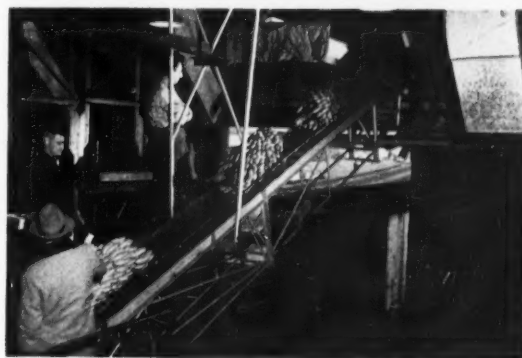
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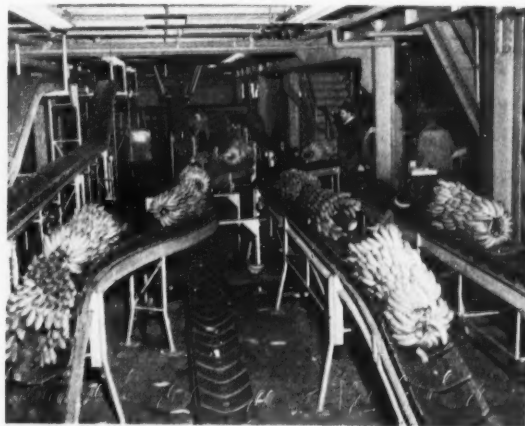
TRUCK LOADING is from conveyor at left. The selector, with his team, diverts fruit to the destination best warranted by its condition, thus minimizing losses.



GANTRY cranes unload bananas in pocket-type endless conveyor belt. As stems arrive at track shed (right), they are counted, unload automatically on Conveyor.



SELECTOR (nearest center) judges fruit, other members of team mark stems with colored paper to indicate desired unloading point on Conveyor system.



FITTING into smallest possible space maximum efficiency system was basic problem. Each line has a different color which workers easily distinguish.

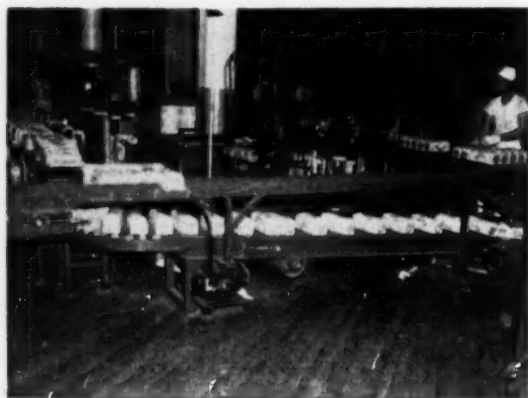


Flow Systems in Food Processing

**Provide Greater Output
Higher Quality
Easier Housekeeping**



SERVING TWO delivery truck loading stations, reversible belt conveyor carries trays, automatically loaded at wrapping machines, in either direction at any time.



ANOTHER conveyor line from wrapping machine can feed underside belt conveyor leading to horizontal belt which travels out to semi-trailer loading dock.

INGENUITY already noted in the application of mechanized handling to the canning industry extends into practically all food production operations. The latest material handling methods and equipment provide the high speed, high quality, low cost production—in restricted working areas and within stringent sanitation standards—that goes so far to maintain the American standard of living. Some outstanding examples of material handling principles applied in food production show what can be accomplished.

Integration of Baking, Handling and Packaging

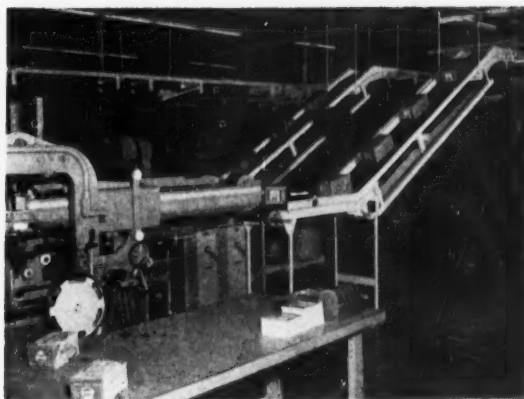
The new 868,000 square-foot Chicago plant of National Biscuit Company has been set up to produce 167 million pounds of merchandise per year. To accomplish this required the thorough integration of all operations—raw material handling, baking, special



WEIGHING ONLY 21 pounds, magnesium hand truck handles 8 trays without stacking or squashing loaves. Folds, for carrying in truck, to width of standard tray.



AFTER WRAPPING by automatic machine, package comprising four boxes of crackers starts trip to shipping room, via roller conveyor, without need of control.



FROM ANOTHER DIRECTION, Zwieback moves from wrapping machine to inclined belt to overhead gravity roller for transfer to Shipping. Note floor area saved.

processing, packaging, intraplant transportation, storage and shipping. Essential elements of the material handling system, which works with twelve 300-foot band ovens, are belt and roller conveyors—for continuous between-process transit—and fleets of tractors and trailers which deliver to and from conveyors.

Crackers emerging from the ovens are transported to filling and packaging machines by means of high-speed belt conveyors. These travel as far as 90 feet per minute. Packaging machines fill and seal 25 boxes per minute.

The conveyors serve two functions—proper cooling and automatic transfer of the product. Each cookie or cracker must be carefully cooled to permit it to be packaged at an exact temperature. The cooling process, which cannot be hurried, is accomplished by regulating the speed of the long conveyor belts. Thus, each product reaches the packaging table at just the right time.

All filling, weighing, carton sealing and wrapping operations are performed on high-speed automatic equipment, with minimum help from human hands. Personnel merely check machine operations.

Upon emerging from the various wrapping machines, bundles of crackers proceed, in some cases, by roller conveyor to the shipping area; in other cases, by means of traction-type belt conveyors. Wherever possible, conveyors were designed to utilize the plant's air rights, keeping floors free for equipment and storage.

One view shows wrapped bundles of Nabisco Zwieback being conveyed overhead from the wrapping machine to the shipping area. In a later stage of this type of operation, wrapped packages of Fig Newtons are shown as they come down a gravity roller conveyor to a converging belt conveyor, which regulates one or the other of these two lines into a single line moving to the shipping area.

Still overhead, these wrapped cartons flow by grav-

(More on next page)



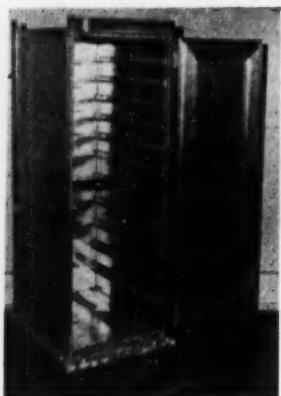
AT LOADING STATIONS in shipping room, packages arrive on six overhead conveyor systems, are then assembled into trailer loads for towing in "trains".



READY for shipment, trailer loads of crackers are hauled by tractor to highway carriers. Shipments destined for Nabisco distribution points stay on trailers.

Flow Systems in Food Processing

Continued



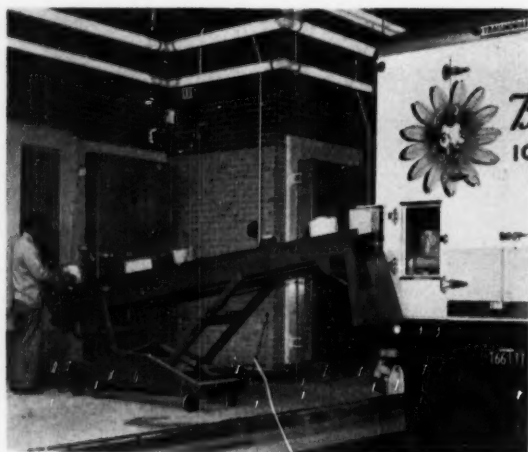
CASTERED bakery delivery cabinet made of magnesium has reduced two-man operation to one-man job, lowered maintenance costs, speeded service.

ity down a series of six roller conveyors. At packing stations, they emerge on friction-type, inclined belt conveyors which deliver them to worker platforms. Here they are transferred into unit loads on trailers for storage before shipment.

Conveyors for Product Preservation

Problems of the Wonder Bread Bakery, in Toledo, Ohio, were about the same as those of other, similar plants. Because bread was stacked on end in fiber boxes, it was a poor looking load that frequently landed on the store shelf. The carrying of rack trucks in delivery vehicles was ruled out because of time and man-power requirements. Truck loading, as it was, took too much time.

A new conveyorized handling system not only eliminated the known undesirable elements but also produced two kinds of bread at the same time.



duced some extra benefits. The equipment required but 305 feet of 18-inch gravity wheel, three horizontal power belt units, and two booster belts for the gravity line.

Saved Over 40 Man-Hours Per Day

Now, as bread comes from the wrapping machines, it slides directly onto fiber-glass trays. An operator slides trays onto a horizontal belt conveyor which, because it is reversible, can feed either of the gravity lines leading to two delivery truck loading docks. Another line leading from the wrapping machine can feed loaves to an underside belt conveyor which carries them on a horizontal belt traveling to the semi-trailer dock.

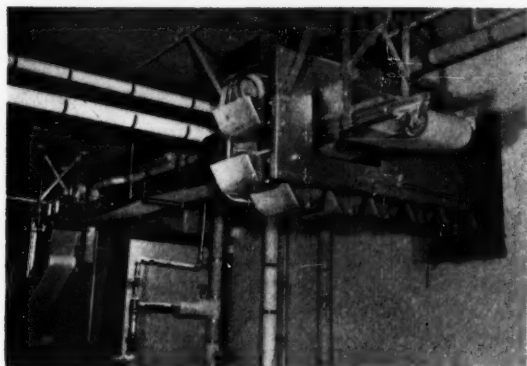
Gravity conveyor carries bread to the delivery trucks. There, one or two men (depending upon volume to be loaded) place trays into trucks according to salesmen's order sheets fastened to truck doors. Delivery vehicles are equipped with tray racks for receiving from the rear.

Loaves which reach the semi-trailer dock, mentioned above, are slid onto trays and placed in rack trucks. These are then loaded into the trailer for the trip to another distribution depot. To Wonder Bread, the most important advantage of the system has been the preservation of the product to the point of sale. But there have been other benefits. For example, one man now loads all trucks in an operation that formerly required a six-man crew—better than 40 man-hours a day have been saved.

In addition, housekeeping has been improved, and flexibility of the flow line makes it possible to wrap and ship two kinds of bread at the same time.



CONTINUOUS FLOW from production to final delivery is provided by conveyor system which includes belt unit built into trailer. In picture right, rear truck door is open for better view, but ordinarily traffic is through small conveyor door.



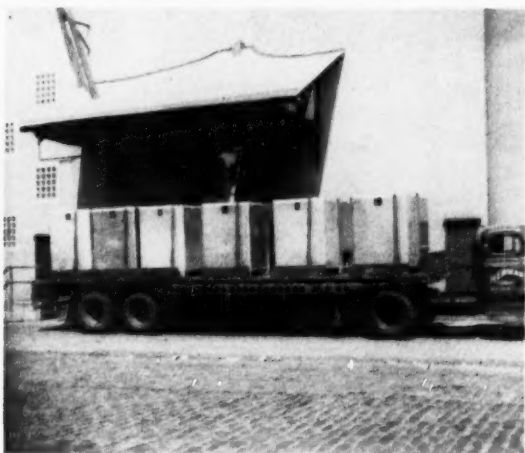
GENTLE handling of perishable product between 3rd floor of one building (right) and 4th floor of another (above) is by system with belts and bucket elevator.

Mechanical Handling From Truck To Shelf

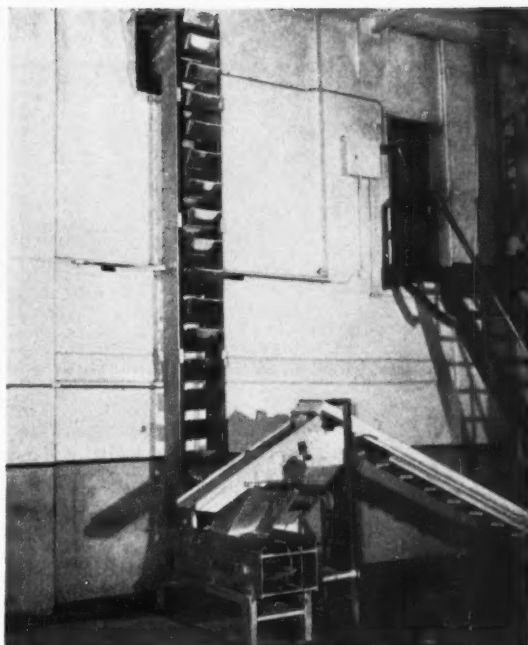
To complete the cycle of mechanized delivery to the dealer's counter or shelf, bakeries are equipping delivery trucks with lightweight, folding hand trucks. A unit illustrated is made of magnesium and weighs only 21 pounds. It folds compactly, fits in the back of the truck, sets up quickly, and carries eight trays at a time.

Other styles of trucks made of lightweight metals are finding increasing use in deliveries of other bakery products, such as cakes and pies.

Awrey Bakeries, Inc., of Detroit, use a caster-mounted magnesium cabinet to make deliveries to its own retail stores. It weighs but 74 pounds. The firm reports that service life is better than that of heavier equipment formerly used; maintenance costs are lower; cleaning is facilitated (the metal is unaffected by alkalis or steam) handling is speeded up; and delivery costs are reduced.



TRAILER-CARRIED metal bins, 12 to a load, hold approximately 21 tons of sugar, are loaded by one man in half an hour. Firm or customer can own bins.



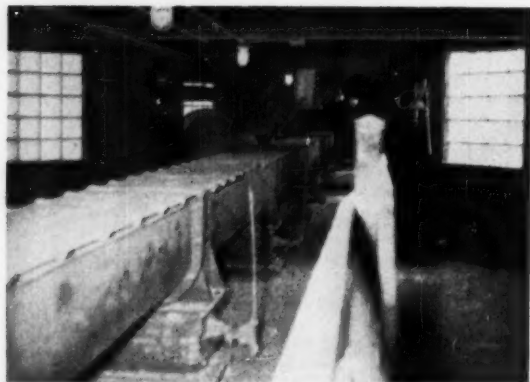
Transportation is integrally tied in with production at the new ice cream plant of Borden's, at Woburn, Mass. Belt conveyors are built into delivery trucks and therefore can be made part of the continuous flow system which runs through the hardening and production rooms of the plant.

The system saves time and manual effort and, of course, preserves the temperature of the product and the truck.

(More on next page)



WITH STEEL TANKER, such as 2800-gal. truck shown on 50-ton scale, driver pumps syrup containing over 12 tons of sugar into customer's tank in about 30 min.



IN SILO headhouse, 90-footx16-inch screw conveyor delivers granulated sugar into storage bins at rate of 30 tons per hour. Plant processes 3-4000 tons weekly.



TRAILER with one-ton draft of raw sugar on platform scale. Truck is towed about 20 feet to left where sugar is dumped on conveyor serving "cut-in" and storage.



LOADED ON CUSTOMER'S SKID, 3200 pounds of bagged, granulated sugar is picked up at conveyor-end by fork truck and carried directly into carrier.

Handling Methods Minimize Product Losses

Covering three separate—but integrated—manufacturing operations, the material handling system at the Brooklyn, N. Y., plant of the American Molasses Company helps considerably to reduce to minimum mechanical manufacturing losses. A balanced, flexible combination of handling elements, the system includes fork trucks, tractors, trailers, pallets, conveyors and elevator units operating in coordinated organization. A large part of it is active 24 hours a day for over 300 days annually. The three operations in the company are molasses packing, liquid sugar manufacturing, and sugar refining.

The molasses operation involves the processing, packaging and shipping of "Grandma's" and other brands of choice, edible molasses. The raw material is received in bulk tropical sources. From storage it is put through processes by means of pipe lines and pumps. Finished products are packaged either in 55 gallon drums or in consumer size jars and cans, which are packed in corrugated cartons. Except for the bulk molasses, all supplies and filled containers are handled on pallets by fork truck—supplemented in a few areas by short runs of belt or roller conveyor as they fit into the production set-up.

The liquid sugar operation of the Nulomoline Division involves a completely fluid operation through processing and storage. Finished products are delivered

(Continued on page 145)



APRON CONVEYOR takes raw sugar, as it is emptied from sacks, to storage and refining. Chain conveyor (not shown) removes empty sacks to cleaning station.



WALKIE PALLET TRUCK transports 3500 pounds of sugar at one time from unloading dock to elevator. Trailers carry 12 bins. The continuous process from refinery to manufacturing plant eliminates storage.

With a Simple System Incorporating Containers

Beech-Nut Saves \$30,000 Annually

A MERICANS are noted, among other things, for their gum chewing. And yet, it is likely that few ever considered the handling required to manufacture the gum—for instance, the quantity of sugar that must be handled. One of the leading gum producers, the Beech-Nut Packing Company, uses thousands of pounds of sugar daily in its New York plant.

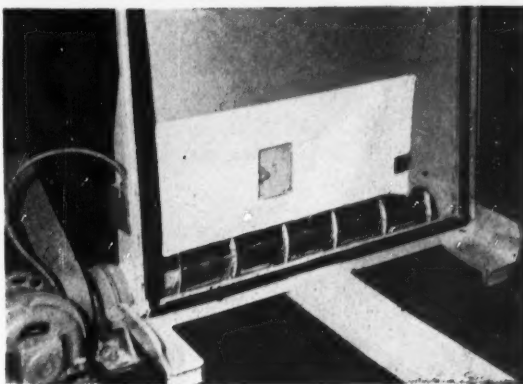
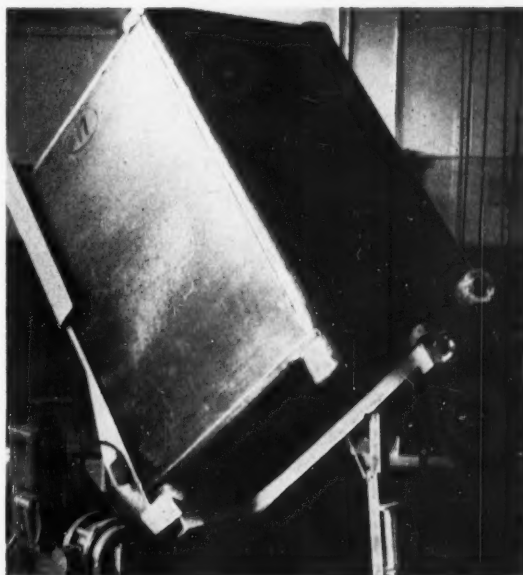
Before the present system was installed, sugar was handled in 100-pound bags which were inverted by means of a pneumatic device and then shaken by hand to be sure all the sugar was emptied. This created a sugar-dust problem, to say nothing of the labor involved. Now, the handling is cleaner, neater; there is no breakage, spillage or removal of empty bags. Furthermore, elimination of the disposable container and the purchase of sugar in bulk quantity, has meant a reduction in cost to the manufacturer of 20 cents per hundredweight.

A simple streamlining of its sugar handling, which involved the purchase of capital equipment, enabled the company to pay for this equipment within a year out of the savings effected. And, since that time, Beech-Nut saves approximately \$30,000 per year through the efficiency achieved.

The new method required the purchase of a "system"—consisting mainly of air-tight aluminum bin boxes, which are transported from point of filling to point of discharge by a fork lift of pallet truck. The 72-cubic-foot bins hold 3,500 pounds of sugar at one time.

Refineries in the New York area supply bulk sugar
(Continued on page 98)

SCREW CONVEYOR feeds the sugar out of the bin at a constant rate and into the hopper on the floor below (top right). Bin is shown in discharge position and actually releasing its contents at a constant rate (right).





FOOD HANDLING IDEAS...

good almost anywhere

FOOD is probably handled more than any other single commodity, and—since it is one of the basic necessities—its handling presents a constant problem. Each day, new methods are found which simplify and speed the handling process.

Conveyors of all types carry bulk and solids from the field to the retail grocery. Packaging machinery automatically fills, weighs and seals goods which at one time required many, many costly man-hours.

Thousands of pounds of food are transported, stacked for storage and shipped—all by one man, a single fork truck, and the unitized load system. Where the turnover is constant but not sufficient to warrant a large equipment expenditure, hand operated equipment plays an important part. Two-wheel hand trucks,

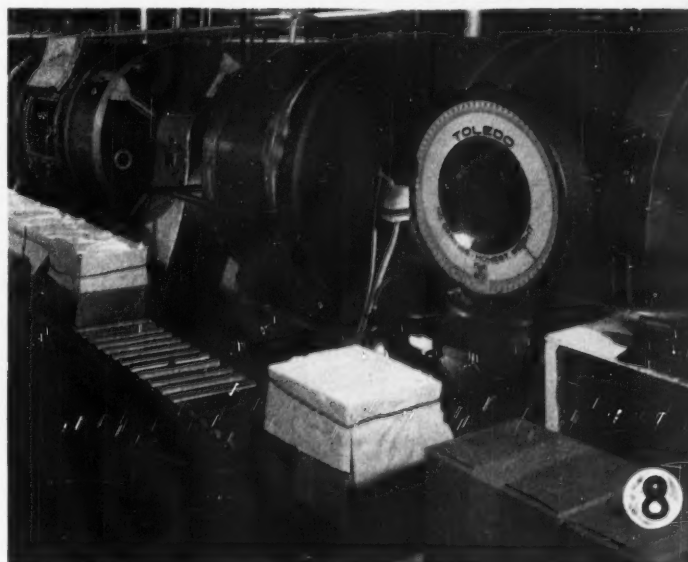
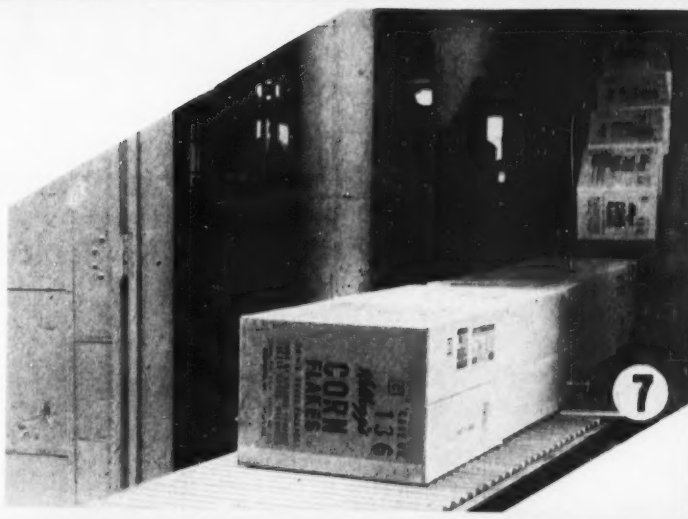


dependable stand-bys for years, have been streamlined and lightened to a considerable degree.

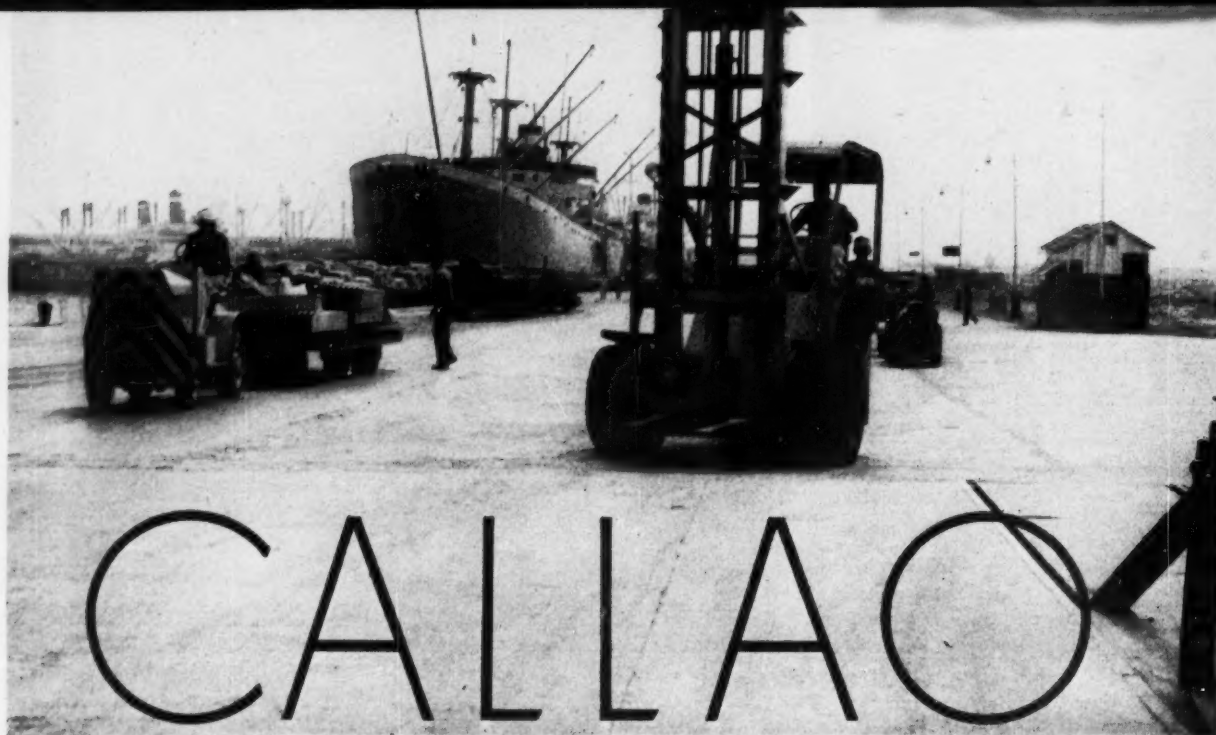
Conveyors circle storage warehouses with floor trucks, which are unhooked, filled with goods, and rehooked for automatic delivery to the shipping door. Where distances permit, retailers often receive orders the same day they are placed.

From every standpoint, food handling and distribution has become highly mechanized. This efficiency has resulted in considerable savings from the processor to the consumer.

Shown in the accompanying photographs are a few of the various methods employed to handle food. Perhaps they can be adapted to improve handling in your operation.



- 1 CONVEYOR BELT makes store to car delivery of packages at this modern grocery.
- 2 FLOOR TRUCKS and overhead conveyor system for order selection in large warehouse.
- 3 GASOLINE TRACTOR tows laden banana trucks from warehouse to dock for delivery.
- 4 HAND LIFT TRUCK and skids serve well for small operator with no stacking problem.
- 5 ELECTRIC FORK TRUCK tiers goods three and four high for temporary storage.
- 6 REMOTE CONTROL TRACTOR and floor trucks encircle this order picking area.
- 7 BELT & ROLLER CONVEYOR carry packaged food from upper story to shipping door.
- 8 SCALES systematically weigh butter. It's conveyed, weighed, packaged in one line.



How North American Handling Methods Made It South America's Most Modern Port

SAIID by many to be the most modern port in the world, the Port of Callao in Lima, Peru, is a testimony to North America's designs and "know-how", and its willingness to help further the progress of its sister continent to the south. The Port's advanced material handling methods and ultra-modern facilities are the result of a total transformation completed in two general phases.

The first of these was a construction phase, which included four piers projecting from a mole 1919 feet long, and four pier sheds with a total area of 192,204 square feet of covered shipside storage.

The second phase was operations. For years, congestion at the port had been a problem. Several studies had been made of the situation, but with no noticeable improvements. This problem reached a climax on April 1, 1951, when the European Steamship Conference imposed a 25% port congestion surcharge on all freight carried by members' vessels bound into Callao for discharge at that port. This called for immediate remedial action on the part of the Peruvian Government.

A thorough study was made by experts in the fields of economics, finance and port operations. Recommendations submitted after the investigation resulted in the government's obtaining a foreign loan of two-and-a-half million dollars, one million of which was

used for the purchase of modern material handling equipment.

Then, from the United States, the Peruvian Government engaged the services of Colonel Howard W. Quinn, retired, an authority on organization, administration and operation of modern ports and on modern cargo handling methods. Colonel Quinn was appointed Executive Director of the port, and from April 22, 1951, under his leadership and direction, improved handling procedures were instigated. These resulted in Callao's recognition as the most modern port in South America, and among the finest in the world.

Modernization Program

Three projects comprised the program for port modernization and mechanization. In order, they were:

- I. General Cargo Handling
- II. Bulk Grain Handling
- III. Organization

I. General Cargo Handling Project

The general cargo handling project included:

1. Purchase of the necessary material handling equipment to mechanize general cargo handling operations in the port.



CONGESTION, damage and pilferage were problems at Callao's Port prior to its modernization program (top). Now, efficient handling is routine; the entire area is fence-protected; goods can be promptly stacked, stored and located (right).



2. Purchase of pallets, pallet racks and the purchase and/or fabrication of the necessary stevedoring gear and equipment to enable the port to obtain the most effective use of the new equipment.

3. Purchase of the necessary shop tools and equipment to efficiently maintain the new material handling equipment.

4. Repair of existing piers, warehouses, buildings, roadways, etc. to correct the deficiencies resulting from long neglect of maintenance of port facilities, buildings and structures.

5. Installation of the pallet rack system in pier-side warehouses, plus other modifications to provide Callao with four of the world's most modern general cargo berths.

6. Creation of additional open storage space by paving three available areas, and the creation of addi-

tional hard-stands by filling, leveling and rolling various areas.

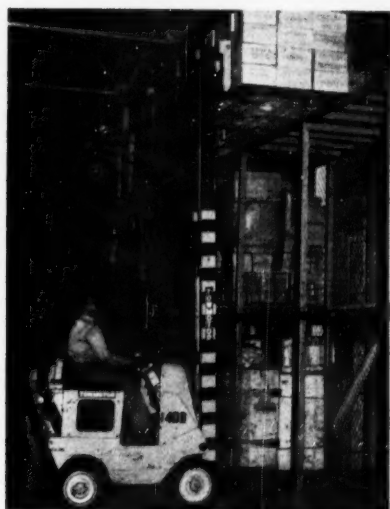
II. Bulk Grain Project

The bulk grain project involved the installation of a modern port terminal grain elevator with a storage capacity of 20,000 tons of wheat, with two ship discharge towers and a total capacity of 300 tons per hour. Plans called for discharge of grain to rail cars and trucks to be made simultaneously; grain to be weighed automatically.

III. Organization Project

This project was foreseen to be the most formidable and difficult. Had it been possible to start from the beginning with an entirely new organization and new labor force, the problem would have been greatly simplified. However, that was not possible. There

(More on next page)



GOODS requiring protection are stacked in warehouse at pierside.



METHODS formerly employed resulted in storage as shown. Chaos reigned.



STORAGE in the open permits extra high stacking of merchandise.



BAGS are palletized at the pier and loaded onto trailers. Tractors pull the trailers to a specified location

where they are unloaded and stacked by fork trucks. Crushable goods are stored in pallet racks.

CALLAO

Continued

were a number of distinct agencies concerned with operations at the port, including the Administracion Portuaria, which exercised remote control in varying degrees over the terminal administration; the Customs service, which was in reality the terminal operator; the Navy, which controlled port labor; the steamship companies which controlled the stowage and discharge of cargo aboard their own vessels; and the various shippers and consignees which loaded and discharged their own vehicles in various parts of the terminals.

In addition, the regular police, Customs guards, terminal guards, private guards and detectives all operated in the terminal under no apparent coordination of their various activities.

To carry out Project I, the following equipment was purchased:

- 2—Straddle Carriers
- 30—Steel Pipe End Racks
- 22—Tractors

- 6—Truck Cranes
- 49—Fork Lift Trucks
- 5000—Pallets, Stevedoring Type
- 5000—Pallets, Warehouse Type
- 11,376—Lineal Feet of Pallet Racks
- 40—Sets Heavy Duty Gravity Rollers
- 260—Trailers

The latest lift truck attachments are used at the port, including the crane arm, side shifter, oil drum device, paper roll clamp, bale clamp, revolving roll clamp, rams and standard and fully tapered polished forks.

Several American manufacturers who supplied equipment to the port sent experienced men there to instruct operators and maintenance men in the proper operating methods and service procedures. Engine hour meters were installed on most of the equipment, so that exact knowledge could be obtained on the length of operation of each piece of equipment. A

(Continued on page 142)



TRUCKS capable of lifting thousands of pounds transport and stack machinery.



CRANES pyramid petroleum drums in isolated area, minimizing fire hazards. They once were stored singly in an oily lake.

PROPER SELECTION OF TIRES WILL PROVIDE:

1. Maximum resistance to cutting and chipping with minimum power consumption.
2. Maximum ton miles of material moved for a given battery size.
3. Maximum motor life to move a given amount of material a given distance. Reduced motor heating means longer motor life.
4. Maximum rate of material movement, since the drive motor increases its speed when rolling resistance is reduced.

Effect of Tire Design on Electric Truck Performance

By E. H. Ayers, Chief Electrical Engineer
Industrial Truck Division, Clark Equipment Co.

WITH today's modern design of electric trucks, the power required to move the unit and its load on normal floors often depends more on tires than on any other single factor.

Low tire rolling-resistance is of particular importance to electric trucks. Tires with excessively high rolling-resistance decrease motor life expectancy and battery charge life, and reduce speed of material handling. More work is obtained from a given size of battery, motor and truck if operated on low rolling-resistance tires.

When the modern fork truck was introduced, the only suitable tire available was the standard industrial solid tire. Driver comfort, machine abuse, and load jarring provided reasons for making a change from the solid tire to the modern cushion tire which is now used on more than 75 percent of all new industrial material handling trucks. The cushion tire

provided improved driver comfort; reduced machine abuse; minimized load jarring; provided greater traction, easier steering; and increased tire life.

A high section tire, as contrasted to a low section solid tire, has slightly higher rolling-resistance. Unfortunately, as the use of the cushion tire expanded, some truck and tire manufacturers failed to realize the importance of the low tire rolling resistance in the operation of an electric truck. During World War II, and the period following, Government restrictions required the use of synthetic rubbers which were inherently poorer than natural rubber in power consumption characteristics.

Service Requirements Demand Best Compromise

Heat build-up, rolling-resistance, cutting, chipping, wear and tear resistance, are all important properties

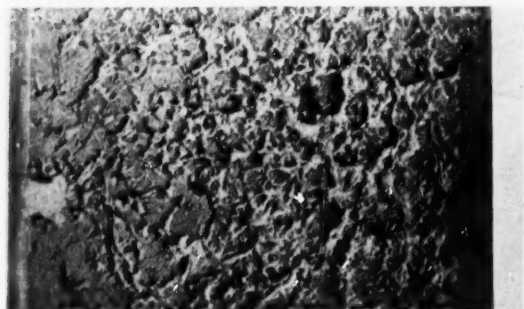


FIGURE 1: Solid Natural Rubber Tire with 100 percent Rolling-Resistance and poor cutting and chipping.



FIGURE 2: Cushion tire with 60 percent Rolling-Resistance but very poor cutting and chipping resistance.

in compounds for industrial tires. Unfortunately, those compounding practices which enhance the rolling ease and reduce heat build-up, at the same time limit the cut, chip, wear and tear resistances which are obtainable. With the present state of compounding knowledge, the best compromise of these properties must be sought for the service in which the tire is to be used.

Cushion tires available for use on fork trucks are produced in assorted levels of rolling-resistance. Those presently available give rolling-resistance of 60 to 175 percent torque as measured on the Clark dynamometer. One hundred percent torque has been taken as the rolling-resistance torque for an available solid natural rubber tire (See *Figure 1*).

Some tires have fair, some good, and some superior resistance to cutting and chipping. As shown graphically in *Figures 2 through 5*, the rolling-resistance of tires decreases progressively as the resistance to cutting and chipping decrease. As a result of the use of certain elastomers, poor compounding practice, or poor production control, poor cutting and chipping re-

sistance may occur in a tire having high rolling resistance—as shown in *Figure 6*.

Natural rubber is still the best elastomer for use in producing tires with well balanced properties.

Rolling resistance of tires has been measured by various methods. The methods do not usually check quantitatively but have been found to check qualitatively within the limits of experimental error. Rolling-resistance values shown here were measured on a dynamometer in a laboratory of the Clark Equipment Company.

Cutting and chipping tests were run by the United States Rubber Company at their proving ground. Results of these tests are shown in *Figures 1 to 6* inclusive. All results are after four miles of test travel.

The data shown in *Figure 7* was compiled on tires which were tested on a dynamometer and then on a 4000 pound electric truck. On a specific model of truck, a change of rolling resistance, from 60 percent to 160 percent, changes the running kilowatt hours per ton mile of material moved from .20 to .38.

Kilowatt hours are determined by multiplying the

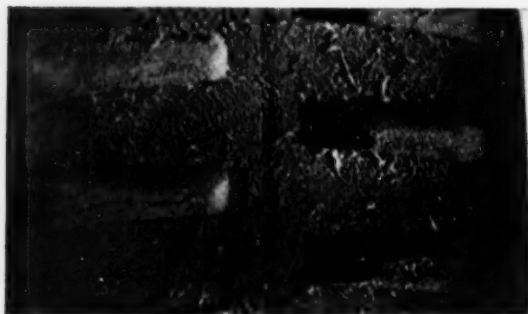


FIGURE 3: Cushion tire with 95 percent Rolling-Resistance and good resistance to cutting and chipping.



FIGURE 5: Cushion tire with 135 percent Rolling-Resistance and superior resistance to cutting and chipping.



FIGURE 4: Cushion tire with 105 percent Rolling-Resistance and good resistance to cutting and chipping.



FIGURE 6: Cushion tire with 175 percent Rolling-Resistance and poor resistance to cutting and chipping.

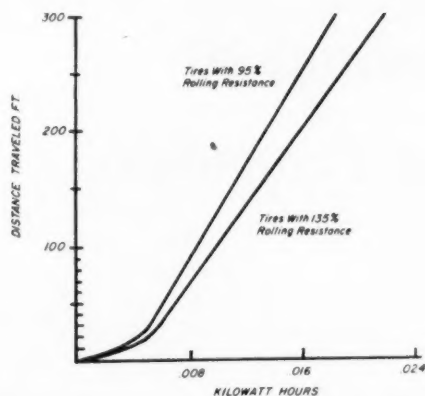


FIGURE 7: Comparison between rolling-resistance and the power required for continuous running per ton mile of material moved.

battery voltage by the current drawn, by the running time in hours, and dividing the product by 1000. Storage batteries are rated in kilowatt hours and are capable of delivering some specific number of kilowatt hours before becoming discharged.

Starting and accelerating an electric truck requires an appreciable amount of energy so that the energy saved, by use of low rolling-resistance tires, varies with the length of run which the truck is required to make. Figure 8 shows actual measured energy plotted versus distance of truck travel for two tires having good resistance to cutting and chipping.

A correlation of field tests on trucks, tests run in the Clark laboratory, and the tests shown in Figures 1 to 6 show that the type of test shown in these figures provides a good means of determining comparative resistance to cutting and chipping problems as found in field service.

In addition to the type of tests shown in Figures 1 to 6, many tests have been run on trucks in the field as well as on the Clark laboratory tire test machine shown in Figure 9.

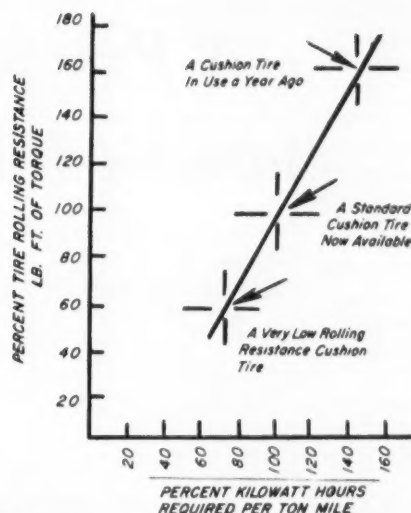


FIGURE 8: Comparison of power required to move a ton of material various distances when using two different tires having good chipping resistance.

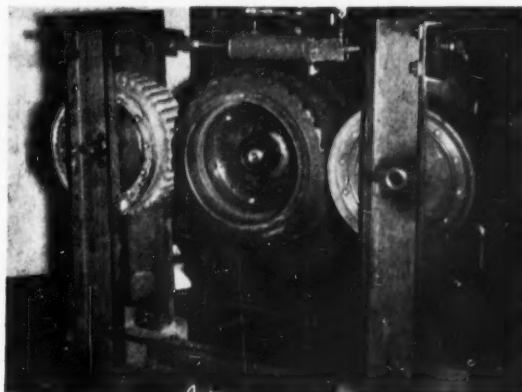


FIGURE 9: Laboratory cutting and chipping test where rated load for the tire is applied for an equivalent travel distance of six miles.



FIGURE 10: Tire with good resistance to cutting and chipping, which has been run for 90 minutes on cutting and chipping test machine, together with machine.



FIGURE 11: Tire with poor resistance to cutting and chipping which has been run 90 minutes on cutting and chipping test machine.

A Practical Manual of Material Handling Procedure

Section 5 SELECTION OF CONTAINER SIZES

By W. B. McClelland

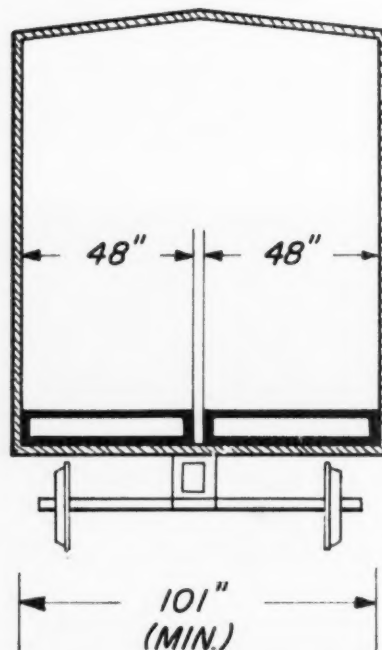
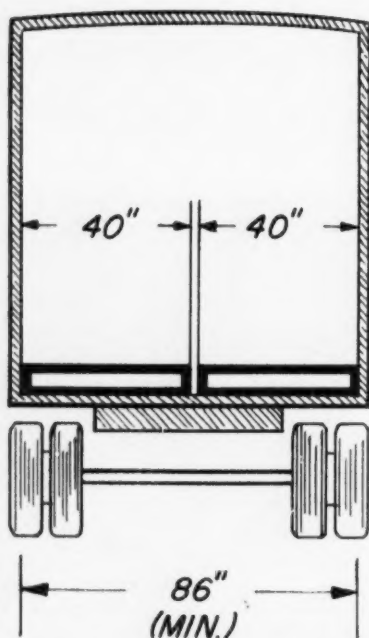
INDUSTRY is coming nearer and nearer to the standardization of pallet and unit container sizes. Urgency in this development comes from the ever growing necessity for the maximum utilization of space. (Just recently, the *Society of Industrial Packaging and Material Handling Engineers* agreed to sponsor a program for pallet standardization in the American Standards Association.)

The most valuable space in industry and commerce is located in the carriers which convey our merchandise. Should not dimensions of such space, then, be the controlling considerations in the design of containers to utilize it to full advantage?

There has been long and intensive study to determine the most logical dimensions for containers which are handled by fork trucks. Today, as far as base dimensions are concerned, two sizes predominate—40x48 inches, and 32x40 inches.

Both sizes can be stacked into carriers with a minimum of waste space. The 40x48 size can be put lengthwise in a highway carrier—the two 40-inch dimensions utilizing the full 80 inches inside a semi. In loading rail cars, pallets can be turned the other way so that the 48-inch dimensions occupy the 96 inch width of the standard car.

Two of the 32x40 pallets can be put into semi's or



trucks with the 40-inch dimensions again utilizing the full width. When loading a railroad car, three of the 32-inch dimensions fully occupy the cross space.

As for height of containers—there is appreciable agreement that 24 inch usable height is convenient for all-around operations. The 24 inches plus approximately 6 inches of non-usable space, below, for the pallet, produces a 30-inch overall height.

A thirty inch height is not difficult for a man to negotiate if he must bend over it to remove parts. It also is convenient for stacking in a carrier. So, until a better standard is universally adopted, we'll consider (for the sake of organization) that the 40x48x24 and 32x40x24 are the interim container sizes to be used in the transit phase of handling.

In-Plant Containers Multiples of Standard

If we have adopted a company standard, then other containers—larger or smaller—can be made in exact multiples or divisors of the standard. And the unit load principle remains intact.

Suppose there is established for your plant a base of 40x48 inches—but you need a larger one! You might then make it 40x96. Perhaps it isn't necessary to go as large as this. You might provide more flexibility with an "oversize" unit of 40x72, two of which will fit into the same space as three of the standard 40x48's.

For smaller containers, such as shipping or shop boxes and baskets, set them up so that two, four, eight or sixteen of them will occupy the same base as the company pallet—40x48 inches. Storage is easier and more economical if one type of container can be re-

placed in an area by a unit which will occupy the same space. It is hardly necessary to mention the economies available to a plant which standardizes on a minimum number of types and sizes of containers.

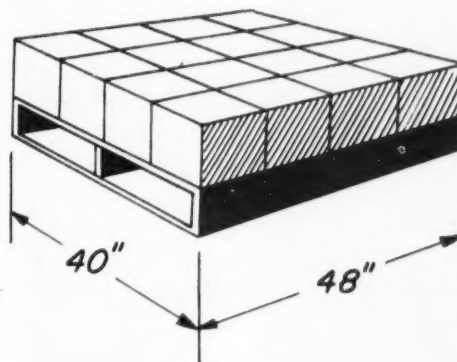
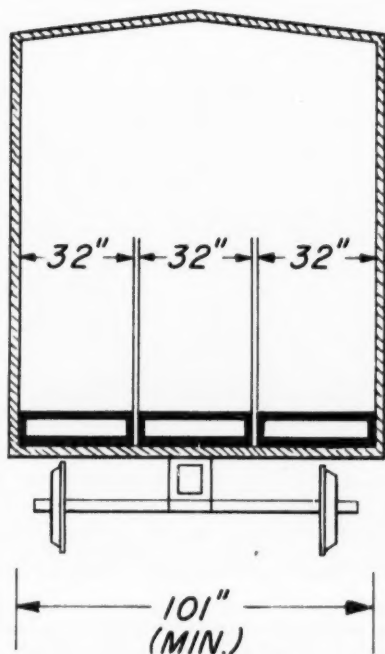
We have thus developed a strong link leading to the full integration of shop (operation) and transit phases of material handling. (See Chart 1, Section 2, May issue.)

Equipment to Handle Standardized Load

Once a company has adopted a standard dimension—say it's the 40x48 inch base—the next move is the establishment of a load for the base. In the example of Section 4, we have worked with a 4000 pound load on a 40x48-inch base. The center of gravity is 24 inches from each end of the long dimension—there is a 4000 pound load to be lifted on a 24 inch center. That means we have established as our requirement a 96,000 inch-pound rating. (This may be elementary to some readers, but our experience around the country has convinced us this basic consideration is too often either insufficiently understood or completely ignored.)

Now if you have established that fork truck handling, for example, is what you need for your operation, you are in a position to specify equipment on a realistic and economically sound basis. In other words, the need has been established and the equipment sought to fit it. We can expect to start realizing economies as soon as the system is put into operation.

Scheduled for the next installment of this Manual is a thorough discussion of the operation of unit container systems in Process Handling, and the gains which can be expected from such systems.



CARRIER DIMENSIONS FROM 1954-55 FLOW DIRECTORY

Door Controls Can Close Profit Leaks

KEEPING doors closed is probably more important to the food industry than it is to any other. Where air conditioning must be preserved, temperatures maintained, contaminants eliminated, and the like, control of doors becomes a real economic necessity.

Although they do not apply exclusively to the food industry, the following seven reasons have been given by various firms for the installation of automatic—or semi-automatic—door operating devices in their plants.

1. Time and money savings: Automatically operating doors eliminate delays that occur when truck operators must open and close doors themselves, they increase efficiency of the handling system by permitting trucks to make more trips per day.

2. Damage reduced: Because door controls stop the banging of trucks into doors to open them, damage to contents and pallets or skids is eliminated here.

3. Maintenance costs lowered: Smashed doorways, frames and trucks are reduced to minimum.

4. Operating costs lowered: Controlled doors minimize loss of air that has been conditioned to protect foodstuffs.

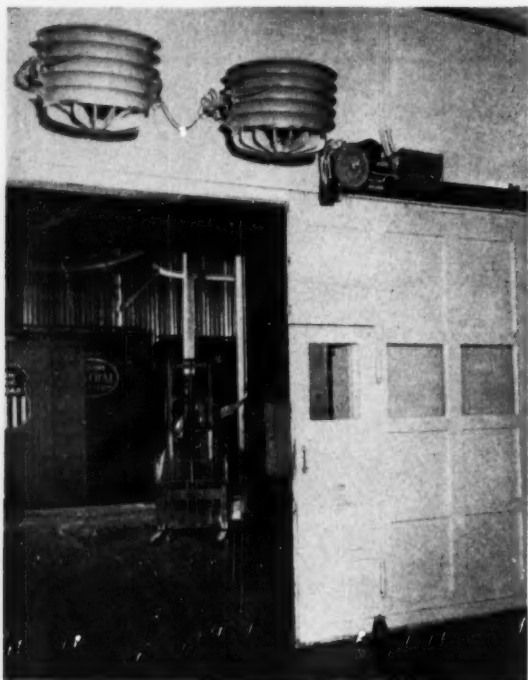
5. Safety increased: Controls prevent injuries to truck operators—or other personnel—that may occur when trucks are banged into doors.

6. Foodstuffs protected: Prompt closing of automatically operated doors helps maintain an uncontaminated atmosphere.

7. Sanitation improved: Automatic doors, snugly closed, open only to permit the passage of men and vehicles, exclude rodents, insects and airborne debris.

In connection with this last point, an assist is given to the door controls of a large, West Coast food producer. One of its doors is located on the packing floor,

(Continued on page 122)

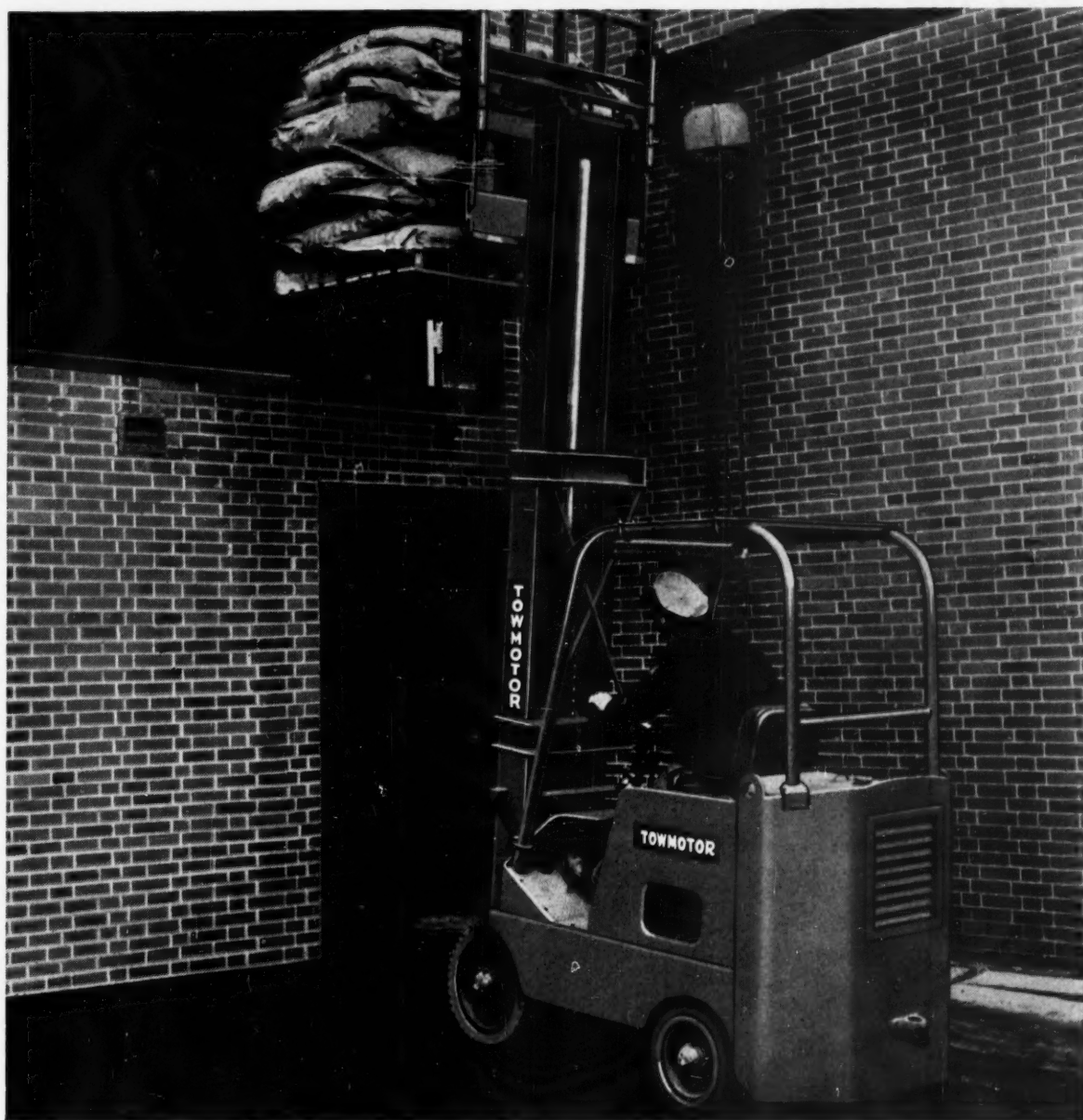


CONSERVATION of air conditioning and protection against flying insects is provided by dual purpose system—door controls and fans—in West Coast plant.



AUTOMATICALLY operated sliding doors have increased efficiency of material handling system at Minter Brothers. Most doors can have controls.

CUTTING COST



HIGH STACKING for down-to-earth savings!

Tremendous savings are being made by a well-known brewer with Towmotor Fork Lift Trucks. High stacking increased usable storage 32%, material flows faster to-and-from production, truck loading is 28 times faster, and the highway truck fleet was reduced 15%. Such savings are yours with Towmotor **Mass Handling*. Have a Towmotor *Mass Handling Engineer* analyze your material handling needs, or write for, "How To Catch Man-Hour Thieves." TOWMOTOR CORPORATION, Div. 808, 1226 East 152nd Street, Cleveland 10, Ohio.

*TOWMOTOR MASS HANDLING—Moving more units faster, at lowest cost!

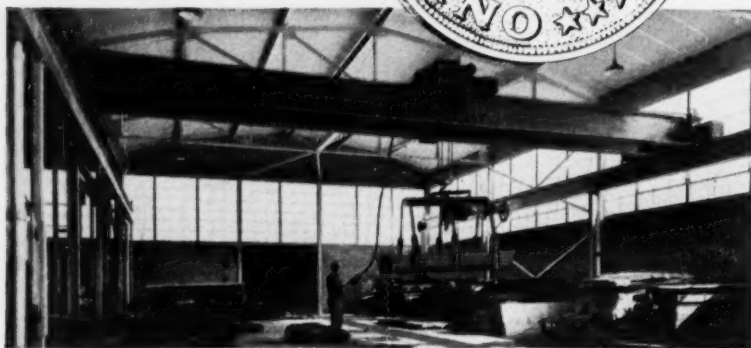


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Since 1919

IT'S HARD TO COMPETE WITH A TOWMOTOR EQUIPPED PLANT!
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FLOW • AUGUST, 1954

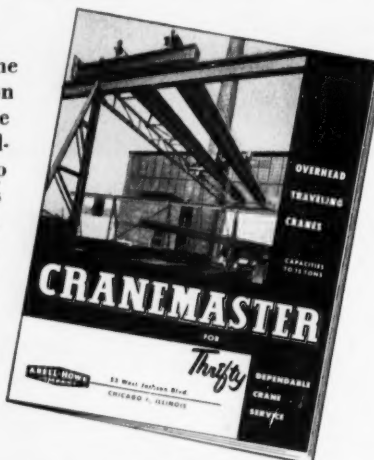
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- ⚡ Standardized models fit virtually every building condition—save you special engineering costs.
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MECHANIZED HANDLING

(Continued from page 77)

In an emergency, any of the laborers can stop all equipment by throwing one of the switches convenient to all unloading platforms. The master switchboard of each gantry is controlled by one man on deck and is no larger than an average-size cigar box.

Stationed at check points along the routes of each conveyer are inspection teams. As each stem glides by, the inspector determines at a glance the quality, size, condition and appearance of the fruit. He calls out a color denoting these characteristics, and one of his assistants places a marker of that color on the stem.

Further on, unloading crews watch for the colors that were assigned to their particular station. Two "raisers" lift the designated stems from the moving conveyer and place them on the shoulders of two "passers," who in turn carry the fruit to a team of "stackers" for placement in the truck or railroad car. If the fruit is seen to be ripening too rapidly as it comes off the ship, the inspector can divert it to a special department geared for speedy distribution to readily accessible markets.

Automatic Cleaning

The conveyer continues on through various other operations. At one point is a cross-loading system where fruit can be transferred from one conveyer to another. At one point, the conveyer tilts 90 degrees to dump broken fruit, singles, scraps and bits of stem into waiting refuse boxes. Still in motion, it then inverts 180 degrees and passes across a brush for cleaning. It finally rotates around a 40-inch diameter drum to continue its circuitous journey back to shipside.

The terminal and its handling system is currently unloading four ships a week, but it can be geared to one a day. The exchange from ship to land transportation is made rapidly with a minimum of effort, making it possible, says Kingsbury, to get the fruit to market in a shorter time than was ever before dreamed possible.



CONNECT TO BATTERY as Frank J. Thornton, foreman of the Albany Freight Transfer, Delaware & Hudson Ry. is doing, then...



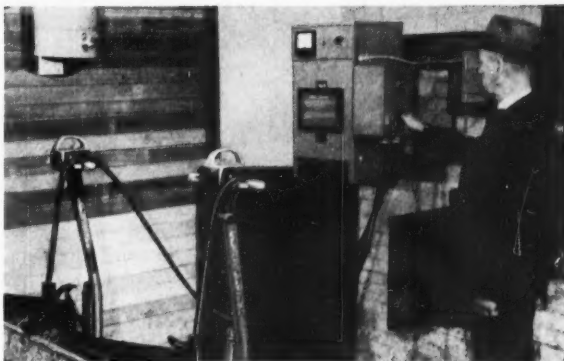
TURN ON TIMER . . . and the charger takes over automatically. When charge has been completed, units turn off automatically.

Why Delaware & Hudson Railroad Uses G-E Chargers for Driver-Lead Trucks

Five nights a week for the past three years, two G-E Rectifier Battery Chargers with sequence charge control have charged four driver-lead trucks at the Delaware & Hudson Railroad Corp.'s Albany Freight Transfer. "Excellent service" reports A. B. Cook, Freight Agent in Albany. "We need top efficiency for closely-timed freight handling, and we get it with G-E Rectifier Battery Chargers."

Easy to install, easily moved to more efficient locations, and simple to operate as well, G-E Rectifier Battery Chargers have no moving parts to wear out, require virtually no maintenance, and can be adjusted to charge different types and sizes of batteries. The high quality rectifier stacks assure long, economical life.

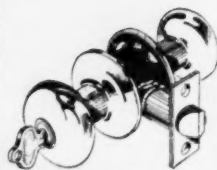
For more information, see your truck manufacturer's agent or G-E Sales Office. For literature write to Section 463-9, General Electric Company, Schenectady 5, N. Y.



DOUBLE CHARGING CAPACITY with G-E Sequence Control, for less than the cost of an additional charger. With one charger you can charge 2 batteries in 13 hours or less.

You can put your confidence in—
GENERAL  ELECTRIC

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AMERICAN HARDWARE CORPORATION

This respected name in hardware uses the UNITABLE belt conveyor to speed the flow of products during assembly (see photo), inspection and packaging.

The ORIGINAL

UNITABLE

BELT CONVEYOR

Why do so many big names in industry use the famous Unitable belt conveyor? It's because it is the most *adaptable* slider-bed belt conveyor on the market . . .

for Assembly, Inspection, Packaging

It pays for itself by giving you dependable flow of materials where you need it. Made from standard

parts, this unit will save you money in initial cost and upkeep as well as in performance. 10' lengths in various widths. Choose from the versatile Power-Pac Tandem Roll Drive or the economical Conventional Head Pulley Drive.

Send for specifications on the *original* Unitable—most imitated belt conveyor of its kind.

CONVEYOR SPECIALTY

COMPANY, INC.

Conveyor Specialty Company, Inc., 36 Newport Ave., N. Quincy 71, Mass.

Send specifications on ☐ THE UNITABLE

- ☐ Other Belt Conveyors ☐ Slat Conveyors ☐ Gravity Conveyors
☐ Reciprocating Lifts ☐ Complete Package Handling Systems

Name, Title (clip coupon to letterhead)

Circle No. 42 on Reader Service Card

BEECH-NUT SAVES . . .

(Continued from page 83)

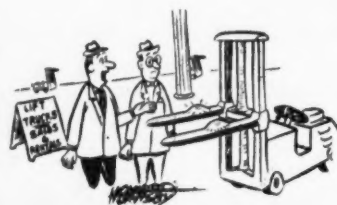
to Beech-Nut, which sends 12 bins at one time by trailer truck to the refining plant. The bins are filled with 42,000 pounds of sugar right on the open trailer, using special bin filling apparatus installed by refineries in the New York area. The loading and unloading of the bins is a continuous operation—from manufacturing plant to refinery, back to plant for discharge, and then to refinery for refill.

Some bins are used for fine sugar which is pulverized and used to manufacture the gum. Others handle standard sugar which is made into a syrup to coat the Beechie tablets.

After the bins are removed from the trailer, they are taken to an upper floor in a freight elevator, where they are placed, one at a time, on a tilting machine.

The sugar flows out of the bin and through a magnetic grate, which removes any foreign matter, before entering a hopper on the floor below. The hopper is equipped with an automatic device which stops the flow of sugar when the hopper is full and starts it again when the sugar in the hopper reaches a certain level.

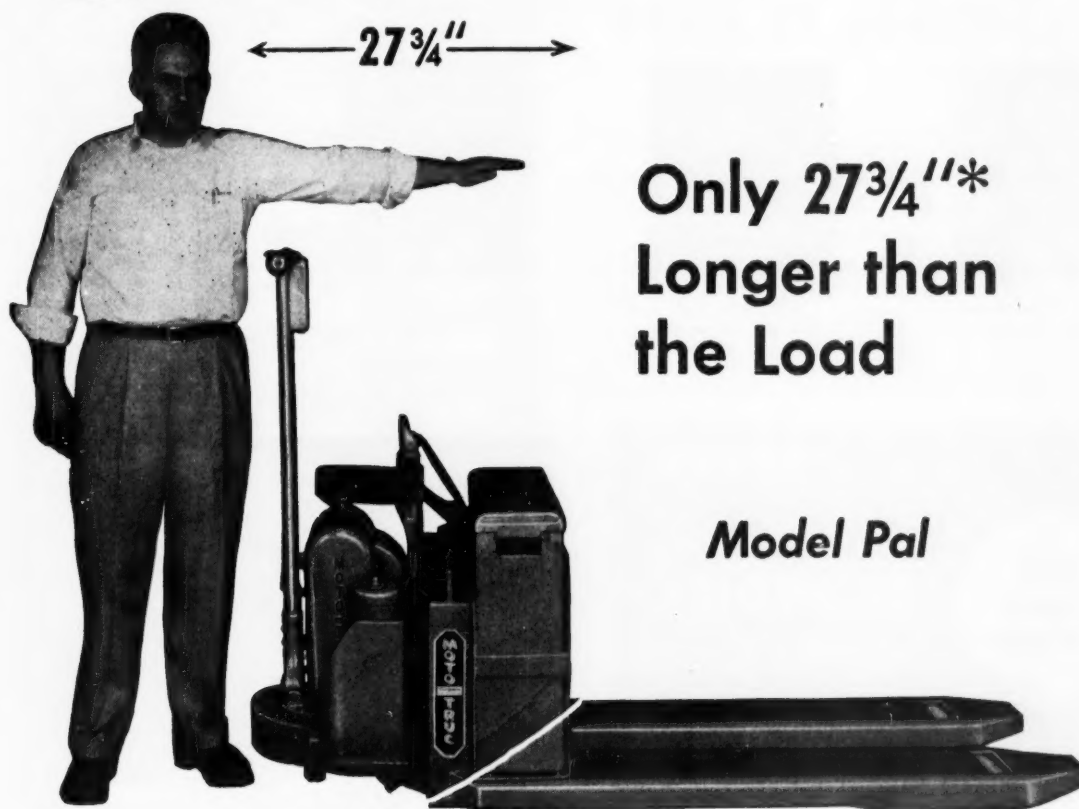
From the hopper, chutes feed the sugar into micro pulverizers. The pulverized sugar is then passed through stainless steel tubing into 250 and 330 pound capacity stainless steel sugar cans, located on a floor below. A rotary air lock controls the feed into the cans. The cans are then wheeled over to the mixers where the gum base, sugar, corn syrup and flavors are blended. Then the gum goes to rolling machines, is cut into sticks, wrapped and packaged.



"Now this model has tremendous lifting capacity."

FLOW • AUGUST, 1954

All the **POWER** *You Want*
In an **ARMS LENGTH**



Only 27³/₄''*
Longer than
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AMHS Prexy Cites Individual Efforts



Douglas A. Gillespie
President

Douglas A. Gillespie, newly elected president of the American Material Handling Society, said in his acceptance speech that the most important contribution to the Society has been made by individual members, who are selling to industry the importance and value of AMHS. In an interview with FLOW, Gillespie said, "I am very confident of the increased growth and service which we will continue to give to industry through the activities of our Society." Officers for the 1954-55 term were installed at a board of directors meeting recently in Cleveland (see FLOW, July, p.151). Several regional shows are planned by the group for the coming year. The Society has 39 chapters, with a total paid membership of over 3660.



Harvey L. Bouwkamp
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If you want to reduce your materials handling cost... speed up loading and unloading... lower your accident rate... then you need a Bronco Magnesium Bridge Ramp.

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Available in any length, adjustable to any plant layout, the SpeedTABLE can perform a multitude of jobs with a minimum of effort. Lengthen it . . . shorten it . . . set it up quickly . . . knock it down easily . . . re-assemble it in a jiffy for a variety of duties wherever needed. SpeedDRIVE motor locates in any section of the line. Get the full facts today! See how you can have the custom power belt conveyor features of SpeedTABLE at standard line prices.

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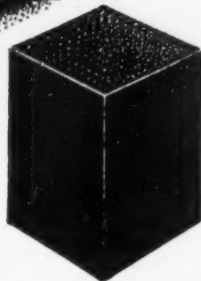
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165 SPEEDWAYS BLDG. • BUFFALO 13, N. Y.

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FLOW • AUGUST, 1954

PACKAGING AND SHIPPING SECTION

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An Easy Index to This Month's Advertisers

Are you looking for a particular type of packaging and shipping equipment? Listed below are advertisers according to type of product they are advertising in this issue. We have attempted to make your job a little easier by listing them as often as possible. To use this index, find the type

of product in which you are interested . . . turn to the advertisers listed under that product . . . circle the correct numbers on the reader service card, mail it, and you'll get complete information in a jiffy.

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4-Step Rope Packaging

AN octagonal corrugated box which eliminates lashing and provides a sturdy, protective container for shipping, storing and dispensing of smaller sizes of coiled rope has been adopted by Columbian Rope Co. of Auburn, N. Y. The company's packaging engineers have perfected a speedy, economical assembly line using a battery of special closing units.

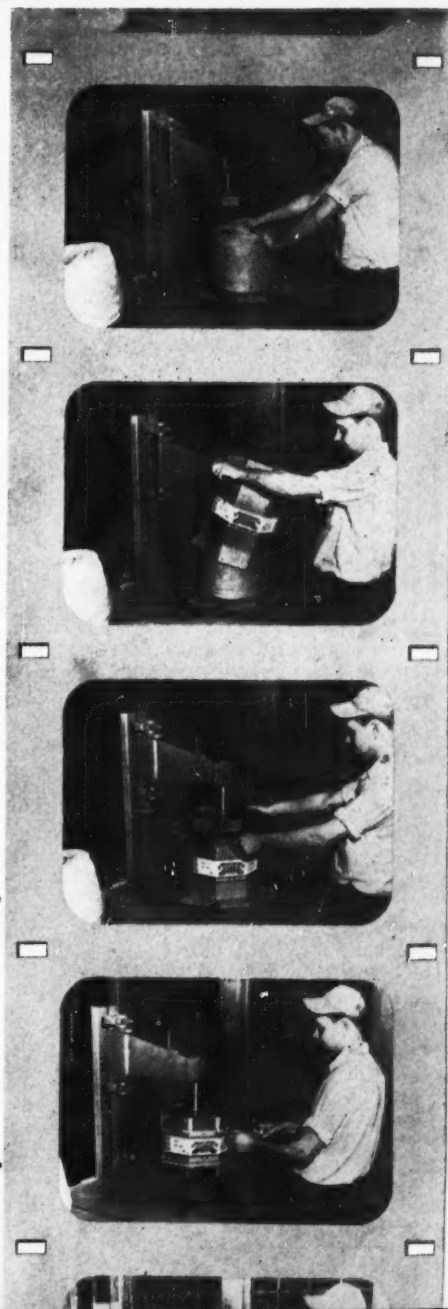
The carton is delivered knocked-down to reduce storage requirements to a minimum. Patented pre-stitched top and bottom caps aid packaging. A coil of rope is centered on the bottom cap and becomes the mandrel to form the package. When the body of the container is set in place and the top cap has been correctly positioned, the operator activates an air cylinder and the container is closed by pneumatic pressure. After top and bottom caps are locked in place, the operator ties each securely with a length of rope.

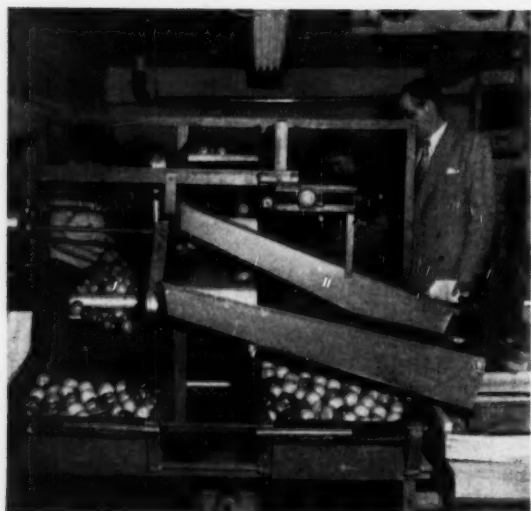
In retail outlets, the container is proving advantageous too. . . it can be rolled about easily; rope is kept clean and it is dispensed easily without tangling and without necessity for removing coil. The desired length is extracted through a die-cut perforation in the lid.

(Courtesy, Gaylord Container Corp.)

Four Simple Rope Packaging Steps . . .

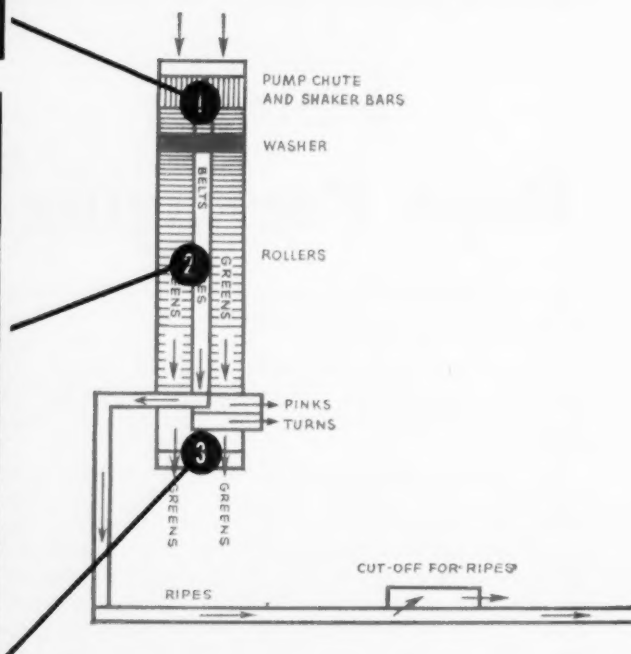
1. Coil of rope is centered on bottom cap. It will become the mandrel to form the package.
2. Body of container fits over coil.
3. With top and bottom flaps interlocked, pneumatic pressure is used for closure.
4. Top and bottom are tied while pressure is on.





Mechanized

by Robert G. White, President
R. G. White Engineering Co.



HIGH SPEED PACKAGING of tomatoes is shown in flow diagram, above, and in the accompanying photographs.

1. HOPPERS with aluminum shaker bar bottoms are at start of grading system. Bars oscillate vertically to remove debris.
2. THREE-TIERED BELT CONVEYOR is key to the grading system. Top belt receives ripers, middle receives pinks and bottom receives turns. Greens remain on roller conveyor.
3. REDISTRIBUTION of tomatoes is simple from end of grading line. Ripers move onto belt conveyor (leading off to the left at top of photo) . . . pinks and turns roll down chutes into tote boxes . . . green tomatoes go into chutes at lower center from which they will be returned to ripening rooms.
4. BELT CONVEYOR carries tomatoes from grading line to the packaging area located on the opposite side of building.
5. PACKAGING AREA where ripers are packed four to a tray, then placed on special belt leading to wrapping machine. Conveyor from grading line cuts across center of photo.

Pre-packaging of Fresh Produce

The practice of pre-packaging fresh fruits and vegetables in consumer-size units has increased rapidly in the past few years. In 1951, total output of unitized produce was 3½ billion pounds . . . an estimate for this year's volume is placed at 10 billion pounds. Leading produce men predict that in less than 10 years between 50 and 75 per cent of all fresh fruits and vegetables will be sold at retail, packaged for consumers in trays, bags, cartons, boxes or similar containers.

This mushrooming trend has forced many pre-packagers to install new machinery and equipment to speed up production. At all levels (grower, shipper and terminal market) costly time-consuming manual methods have been shunted aside in favor of modernized conveying lines, grading and sorting equipment and packaging machines. In many cases, suitable equipment was not available to meet the requirements of the individual packer and special machinery had to be

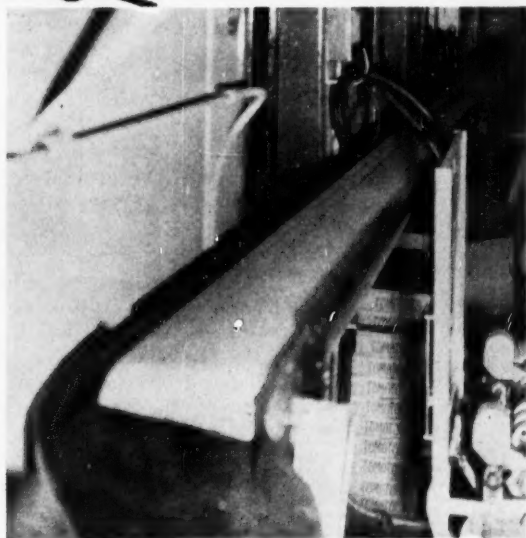
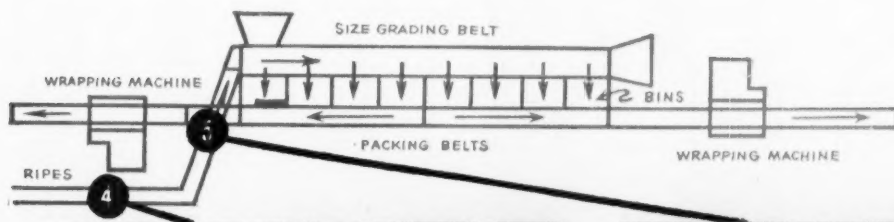
designed to fulfill the demands of increased production.

Engineering for speed alone is not enough. Fresh fruits and vegetables are living organisms, highly perishable and subject to a wide range of damage. Careful handling is essential in every phase of the packing line to reduce the percentage of rejects and to ensure the ultimate consumer of a high quality product.

In the produce business it is difficult and well-nigh impossible to sell mass-produced handling systems that can be selected from catalogs. Each produce plant requires custom-engineered equipment that will conform to the pre-packager's specifications. Aside from such standard sized equipment as trucks, roller conveyors, skids, pallets, etc., handling systems are designed and built individually.

The greatest proportion of prepackaging is done at two points: (1) growing and shipping; (2)

(More on next page)



Bags Ensure Sweet Corn

Iced corn bags, used by New Jersey grower, have helped speed up packaging and keep sugar in corn from turning to starch while enroute to market. Freshly picked corn is inspected and graded (right).



Corn is bagged at four stations, then 20 pounds of ice is placed on top of corn (left). Crushed ice comes to bagging stations through overhead chutes. Bags are made of 3 layers of wet strength paper.

After corn is packaged and iced, bags are wire tied and palletized (right). Pallet loads are then moved to refrigerated storeroom (below). Perforations in each bag permit melted ice to drain.



Courtesy Union Bag & Paper Corp.

terminal market. Although many retail outlets do their own pre-packaging, their efforts do not constitute a major percentage. Such vegetables as carrots, radishes, corn and broccoli are better suited to grower packaging since the waste portions of the vegetables are not shipped to market. The result is, of course, a marked reduction in transportation charges.

The backbone of the pre-packaging industry is made up of the great number of firms devoted primarily to packaging of tomatoes. Since the tomato is the leading prepackaged item, a thorough discussion of its movement from harvesting to packaging will clearly illustrate why proper material handling methods are so vital to the entire industry.

Handling by the Grower

Highly perishable, tomatoes are usually shipped in green, unripened state, to be ripened for packaging at the terminal market. Of the total time spent on harvesting, a minimum average of 20% is required for material handling if it is all accomplished manually. Most of the handling is carried out on a unit basis which requires unloading empty tote boxes from delivery trucks and carrying them into the field for filling. Re-handling for field stacking and truck loading contributes to reduction of quality and quantity.

To determine the possibility of bulk handling and the use of mechanical aids to assist in handling, the University of California College of Agriculture ran tests with a simple six-inch canvas belt conveyor, 20 feet long and driven by a gasoline engine. The conveyor was operated by placing it in the rows between the plants. Four workers picked tomatoes while a fifth loaded tote boxes. The method proved that conveying tomatoes directly on a belt was both safe

(Continued on page 118)

• *some plain talk about strapping*

How Brainard's complete service—steel strapping and strapping tape—can help improve your packaging

• Some people say that steel strapping and strapping tape are directly competitive. We think not. Rather, each method has applications where it does the job best. In most shipping and packaging operations there is a need for both methods. That's why we offer both. Your Brainard salesman is in position to give you completely unbiased recommendations, remove the guesswork and provide you with the strapping materials that best meet *your* requirements. Why not get his advice and use his services now? For complete information write Brainard Steel Division, Dept. K-8, Griswold Street, Warren, Ohio.



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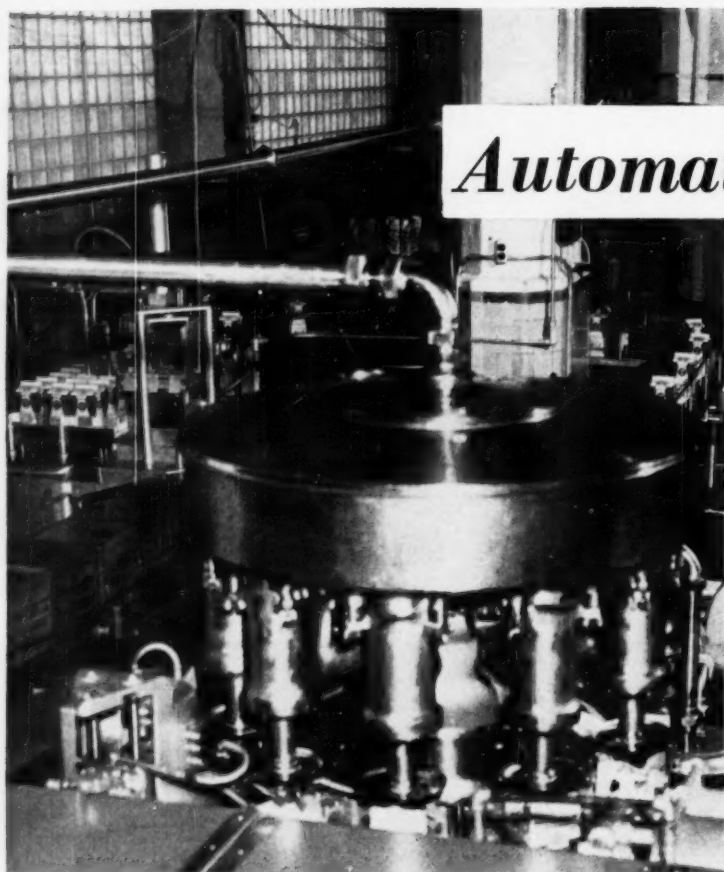
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STEEL DIVISION
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CUTS SHIPPING COSTS 30%. Here Brainard salesman Jack Witzig of Detroit demonstrates strapping cooling coils for air-conditioning units. This method which Jack recommended saves 30% in labor costs and saves materials too. The strapping on the coils is never removed—it holds the coils rigid after installation. Trained Brainard salesmen like Jack Witzig are located throughout the U. S. and in Canada. Photo at Wolverine Tube Division of Calumet & Hecla, Inc., Detroit, of COPPER TRUFIN® coils.

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Automatic Caser for

TWICE AS MANY cases of milk in 1/2-gallon cartons are turned out per hr. at Page Dairy Co., Toledo, since automatic casing replaced hand operations. Filling, sealing and casing are all accomplished on this U-shaped line. Filler is in foreground . . . sealer is almost hidden from view behind filler . . . automatic caser is at left.



AUTOMATIC CASER receives filled cartons from left and empty cases from lower right. Cases are positioned by two devices, a stop at the forward end and a positioner at the outer side. Control devices on machine prevent deposit of cartons when no case is underneath.



GRIPPING HEAD of caser picks up the cartons by their gable tops and lowers them into a case. Operation is with a uniform gentleness which insures a no damage record. During normal conditions automatic caser turns out 3000 filled and cased cartons per hr.

Gable-Top Cartons...

- ... doubles production speed*
- ... reduces carton damage*
- ... cuts packaging costs*

AS a result of installing what is believed to be the first automatic caser for gable-top fiber milk cartons, Page Dairy Co., Toledo, is benefiting through increased production speeds and reduced container damage. The company is one of those which have converted entirely to fiber cartons for store and home delivery.

Until recently, the casing of milk containers has been largely a manual job, with workers taking the containers from a conveyor and loading them into a pack arrangement in a non-partitioned case. Development of the automatic caser represents a triumph of co-operation between packer, carton manufacturer, and designer of packaging equipment. It is designed to handle half-gallon units at a recommended speed of 50 cartons per minute and to load them automatically into cases in 3 x 3 x 1 patterns.

The operation at the Page Dairy Co. starts with the cases being moved on a roller conveyor to the case cleaner where water approaching the temperature of steam is applied under pressure. After being washed, the cases continue on the roller conveyor to the automatic caser. They are delivered according to demand by an electric eye control which releases or holds each case depending upon need.

Simultaneously, in the bottling room, the containers are being automatically set up, sealed at the bottom, sterilized in paraffin, filled, and closed at the top. Filled cartons emerge from the bottling unit and are carried in a single file on a U-shaped conveyor to the caser which serves as a meeting point for the case and filled carton.

Arriving in single file, cartons are pushed onto the platform of the packer three at a time to form a load pattern of nine cartons. Load arrangement is accomplished by a pusher arm. The first three cartons in each load are nudged forward just enough to permit the next three cartons to move into position. The operation is repeated for the second group of three. When the last three are in position, the pusher propels the nine car-



HAND LOADING, formerly used with 1/2-gallon cartons and still used with quarts, requires that two cartons at a time be lifted from conveyor and packed into non-partitioned case.

tons to the gripping head. A fork, synchronized with the pusher, supports the pack over a grid opening. The head of the caser grips the cartons by their gable tops and the fork retracts. Cartons are then lowered into the case.

Each case is indexed into loading position on the machine by two devices, a stop at the forward end and a positioner at the outer side of the case. These stops assure correct positioning of the case under the grid. A trip releases the forward stop when the case receives its load permitting it to move onto an off-bearing conveyor, goes to the loading platform or cold storage room.

A series of controls built into the machine prevents the loading of cartons through the grid unless a case is in position. The forward stop guiding the case prevents a release of a case until it has received a full load.

Half-gallon cartons of milk are loaded into cases at a rate of 50 per minute, permitting Page Dairy to turn out approximately twice the number of cases of milk per hour as were previously filled by hand. During normal working conditions, the automatic casing line turns out 3000 filled and cased cartons per hour.

In addition to increasing production, the casing machine is credited with appreciably reducing the number of "leakers", (cartons which have been fractured so that milk can seep out). The caser operates with a uniform gentleness. In hand loading, however, cartons were often dropped into cases with enough force to cause damage.

At present, the company's quart carton lines are still hand operated. Developmental work is continuing, however, with a view toward producing a caser which will handle gable-top quarts with the same efficiency as the present unit handles half-gallon units.

For photographs and information used in the preceding article, Flow's thanks to; Standard-Knapp, Division of Emhart Mfg. Co., and Pure-Pak Division of Ex-Cell-O Corp.

Nomogram for Solving Cushioning Problems

by James S. Hardigg
Design Engineer

Washington Division, Container Laboratories, Incorporated

A significant development . . . by Container Laboratories, Inc., for Bureau of Ordnance, Naval Ordnance Lab., Dept of the Navy . . . a Nomogram that makes it easy to: Estimate minimum possible cushion thickness; Determine required thickness of given material; Select material which will provide cushion of least thickness; Provide bearing area that results in a cushion of least thickness of a given material.

SHIPMENT of articles too fragile to withstand the shocks and vibrations of handling and transportation, requires special packaging consideration. Whereas more rugged articles may survive the hazards of shipment because of cushioning that is provided by ordinary rigid containers, the safe transit of the more fragile articles requires additional cushioning. However, the cost of the cushioning material and the volume and weight that it adds to the package, considerably increase the overall cost of the packaged article.

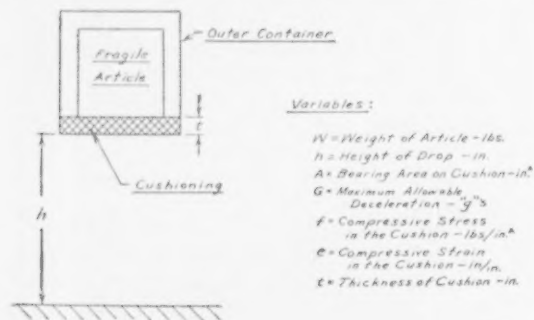
So many articles are cushioned, and such large expenditures are being made, that it is important to achieve economy in cushioning. In order to attain a high degree of economy, the minimum amount of

cushioning material that is consistent with adequate protection must be used. But, determination of this minimum safe amount of cushioning material presents problems. Inasmuch as it is impossible to guess the correct amount, and since it has generally not been feasible to empirically determine it, mathematical means have been developed.

Mathematical Determination

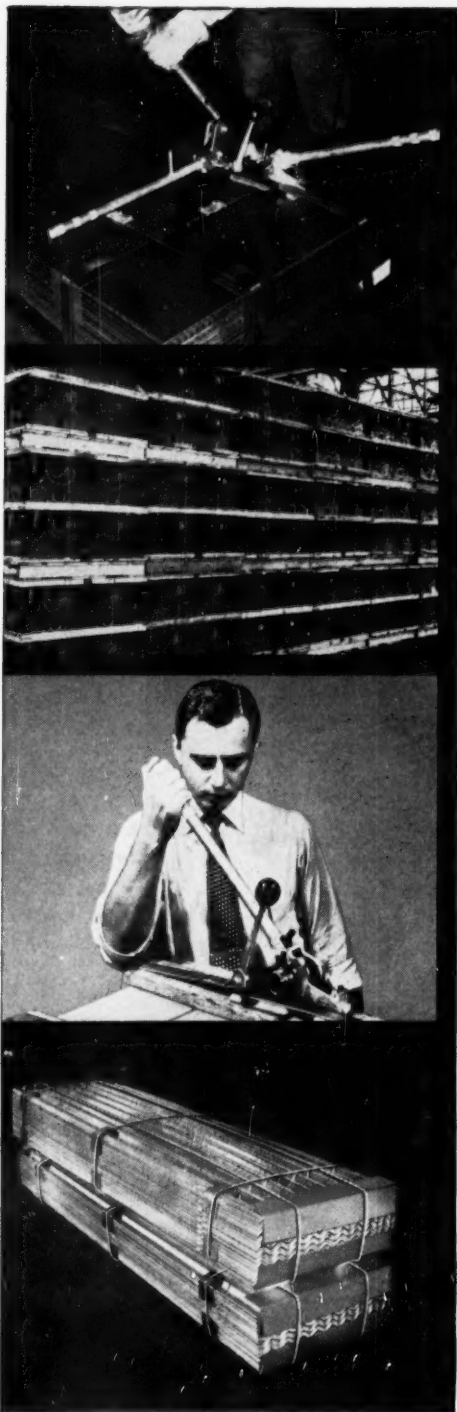
The mathematical method of determining the amount of cushioning that is required to protect a fragile article during shipment is quite complex when all the relevant factors are considered. In fact, there is as yet, no mathematical determination of cushioning requirements that takes all the factors into account. Even if such a mathematical means existed, it could rarely be used now, because usually there is not enough known about the shock and vibration that will be encountered, the strength of the article, or the behavior of the cushioning material. The need at present is for a solution of the cushioning problem simplified as far as possible, so as to require only such information as is presently available.

A considerable simplification has been achieved by considering that the shocks that have to be met can be represented by those which occur when the package is dropped from a height. This procedure is justified by experience with the proof-testing of packaged articles for safe transit. It has been found that there is generally a certain height of drop which may be used to proof-test packaged articles for a given transportation and handling system. This means that the relatively simple shock pattern that is produced by drop-



SIMPLIFIED CUSHIONING PROBLEM for a straight drop test., (see text) Article is encased by cushioning material and an outer container. When dropped, outer container stops abruptly and article decelerates more gradually through compressive yielding of cushioning.

What can USS Gerrard Strapping do for me?



If you're handling, transporting, or inventorying loose parts, Mister, it will pay you to find out what steel strapping can do for you. Look at this:

LOW INITIAL COST—Both Round and Flat GERRARD Steel Strapping are moderately priced in comparison to the cost of handling loose parts. In fact, GERRARD Round Strapping costs about 40% less than any other form of metal reinforcement.

REDUCED STRAPPING TIME—GERRARD Strapping turns corners rapidly and smoothly, ties any-shaped crate or bundle snugly and securely. Both hand-operated and semi-automatic tying machines do their jobs easily, quickly, efficiently.

REDUCED HANDLING TIME—There's a big savings in reduced man hours, too, in tying with GERRARD Strapping. Neatly palletized bundles of machine parts, forgings, or steel pipe are easier to handle, easier to stack—cut handling time drastically.

LESS FREQUENT INVENTORIES—The headache and additional cost of frequent inventories is eliminated. You need never recount the units in a bundle once they've been packaged with GERRARD Strapping, whereas loose pieces need constant retallying every time they are moved.

SINGLE SOURCE BUYING—By making GERRARD your single source of supply for both Round and Flat Steel Strapping you'll save time and simplify paper work, using one purchase order for your strapping. You'll save on freight charges, too, by combining shipments of Round and Flat Strapping in a single carrier.

★ ★ ★

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USS GERRARD

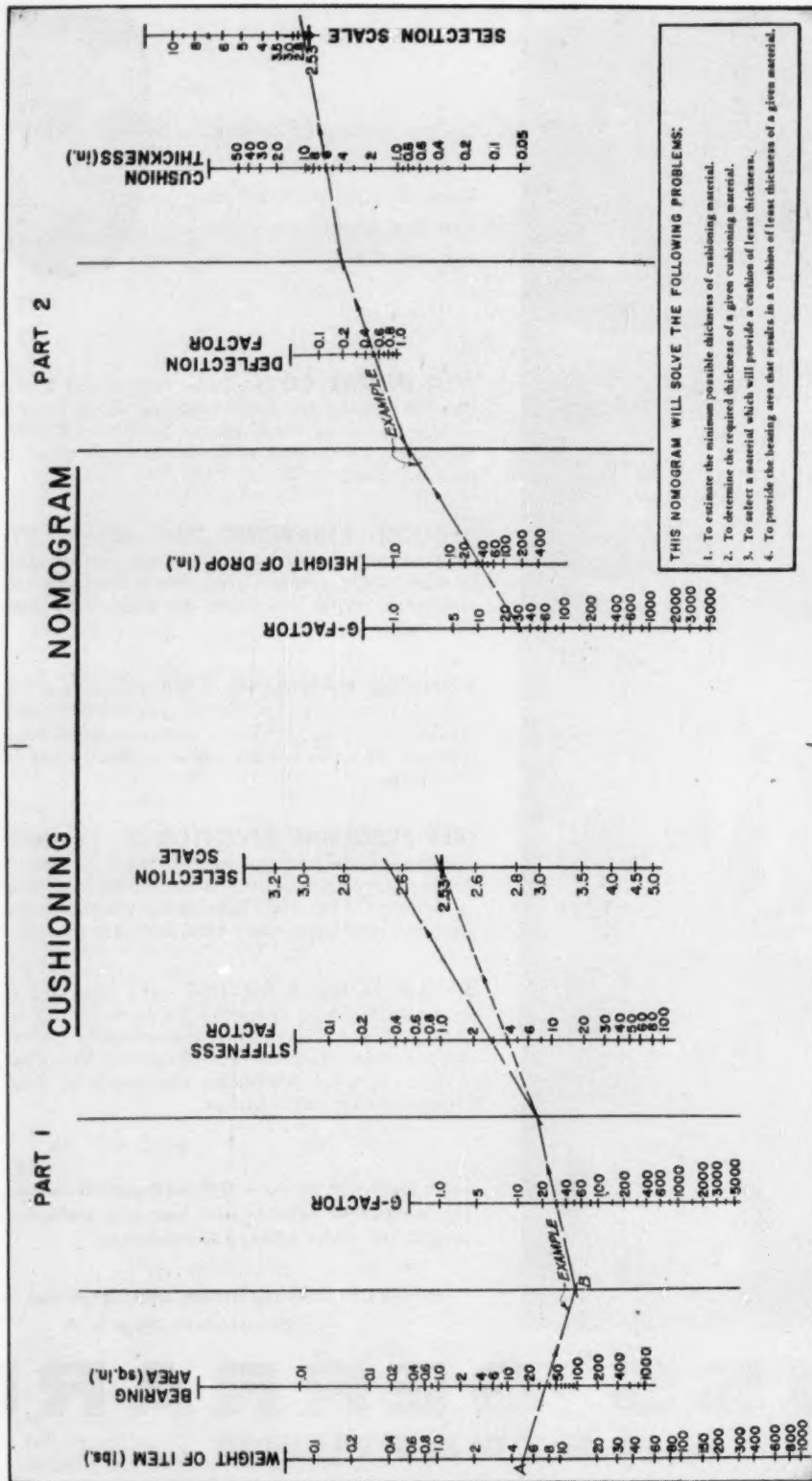
ROUND STEEL **STRAPPING** FLAT STEEL



UNITED STATES STEEL

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Nomogram for Solving Cushioning Problems



*Copies of this nomogram on card stock are available from Container Laboratories, Inc. at \$1.00 each.

Continued

ping a packaged article is generally adequate to indicate its performance under the more complex shocks of transportation and handling.

The simplified shock pattern of the drop test is the basis of the existing theoretical studies of cushioning. In fact, in order to achieve further simplification of the shock pattern, the drop test has been limited to a drop squarely onto a face of the package. There are excellent theoretical treatments of this case, notably those of Gretz¹, Kellicut², Janssen³, Mindlin⁴, Mustin⁵, Orenstein⁶, and Underhill⁷.

But there are obstacles to the widespread use of these studies: In the first place, they require the person who is making the calculations to have a stress-strain curve for each cushioning material that is under consideration. Secondly, not everyone is trained to understand the concepts and the mathematics involved.

Chart for Calculations

To overcome these difficulties and to make cushioning calculations feasible for the majority of people who are faced with a cushioning problem, the following concept was developed by Container Laboratories in consultation with Dr. Mindlin:

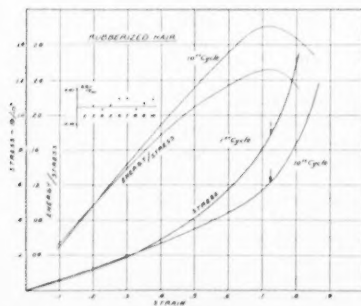
Cushioning calculations would be reduced to the use of a single chart applicable to many cushioning materials. In using the chart, only the simplest arithmetic would be required. To make this

possible, the compressive performance of each cushioning material, which is usually represented by a stress-strain curve, would be expressed by two or three numbers. These compression performance numbers would be determined for each of many cushioning materials and gathered into a table. Then to calculate the thickness required to cushion an article with a particular material, one would enter the chart with the compressive performance numbers for this material. The chart and the table of compressive performance numbers would be all that would be required to make cushioning calculations for a large number of materials. Further, the chart could be in alignment form so that no arithmetic would be necessary in its use. The chart would not have to be changed as new materials were developed. Of course, a new material's compressive performance numbers would have to be determined. The manufacturer of the material could have this done and could supply these numbers along with the other data such as cost and density, etc.

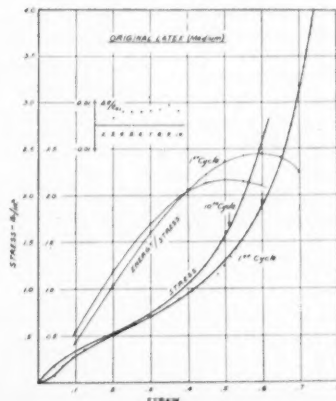
This concept was realized by a solution of the following cushioning problems:

Broadly stated, the problem was to determine the most economical means of using available cushioning materials, to adequately protect a fragile article against shocks and vibration of shipment. The problem had two aspects and may be stated as two separate problems:

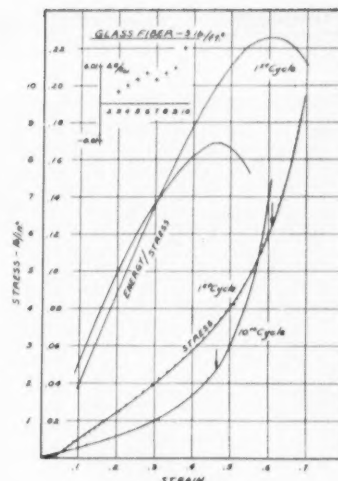
1. Given an article and a par-



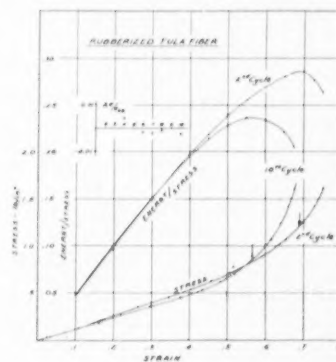
CURVE 1



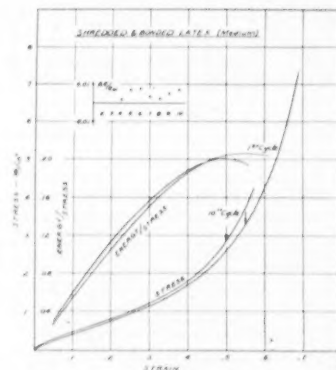
CURVE 2



CURVE 5

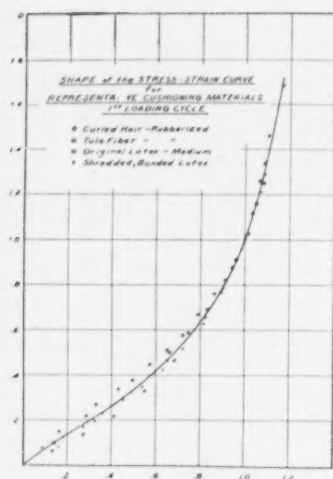


CURVE 4

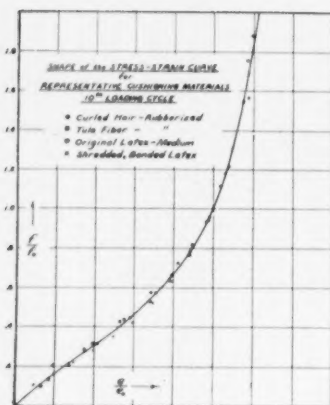


CURVE 3

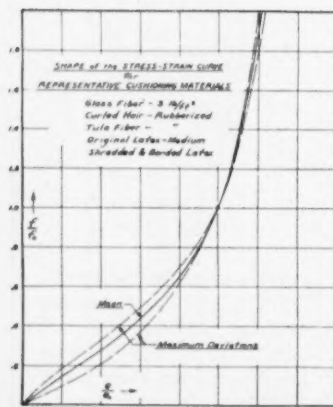
STRESS STRAIN CHARACTERISTICS of five cushioning materials plotted in dimensionless form. Curves were developed from tests under static loading conditions.



CURVE 6



CURVE 7



CURVE 8

ticular cushioning material, how much of this material is required to adequately protect the article?

2. Which cushioning material will most economically protect the article?

These two cushioning problems will be treated in the above order, the solution of the first assisting with that of the second.

The Problem of Cushioning with a Particular Material.

As indicated above, the problem of computing the amount of cushioning material required in a package is complex if all the relevant factors are taken into account. However, at the present time, the knowledge of the magnitudes of some of these factors is so limited that they cannot be directly considered. This study takes into account only these factors which are significant and whose magnitudes are presently known or which are indispensable for a reasonably accurate result. Consequently, this study considers the following simplified problem:

The article is encased by cushioning material and an outer container (see Fig. 1). The resulting package is dropped squarely on a horizontal unyielding surface.

Upon impact, the outer container is assumed to stop abruptly whereas the article decelerates more gradually through the compressive yielding of the cushion that lies beneath it.

Given: The weight of the article, its maximum allowable deceleration in the direction of the drop, its bearing area on the cushioning, the stress-strain relationship of the cushioning material, and the height of drop.

To Find: The minimum thickness of this material that is necessary to cushion the article.

Expressed more concisely in symbols, the problem is:

Definitions:

t = thickness of cushioning in inches

W = weight of the article in pounds

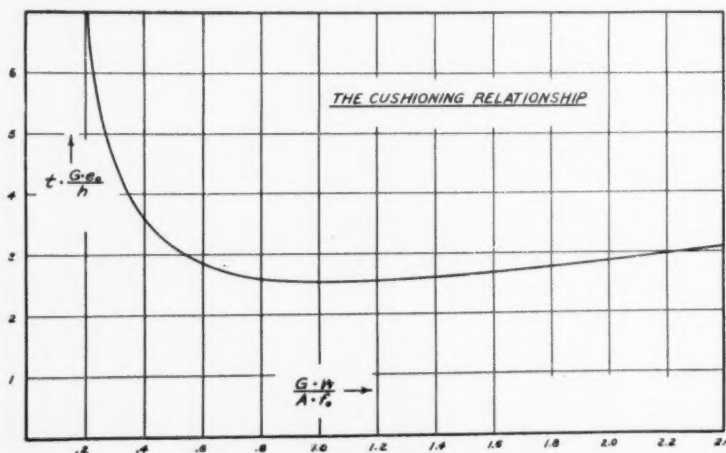
h = height of drop in inches

A = bearing area of the article on the cushioning in square inches

G = maximum allowable deceleration in "g's"
 $\left(\frac{\text{in./sec.}^2}{\text{in./sec.}^2} \right)$

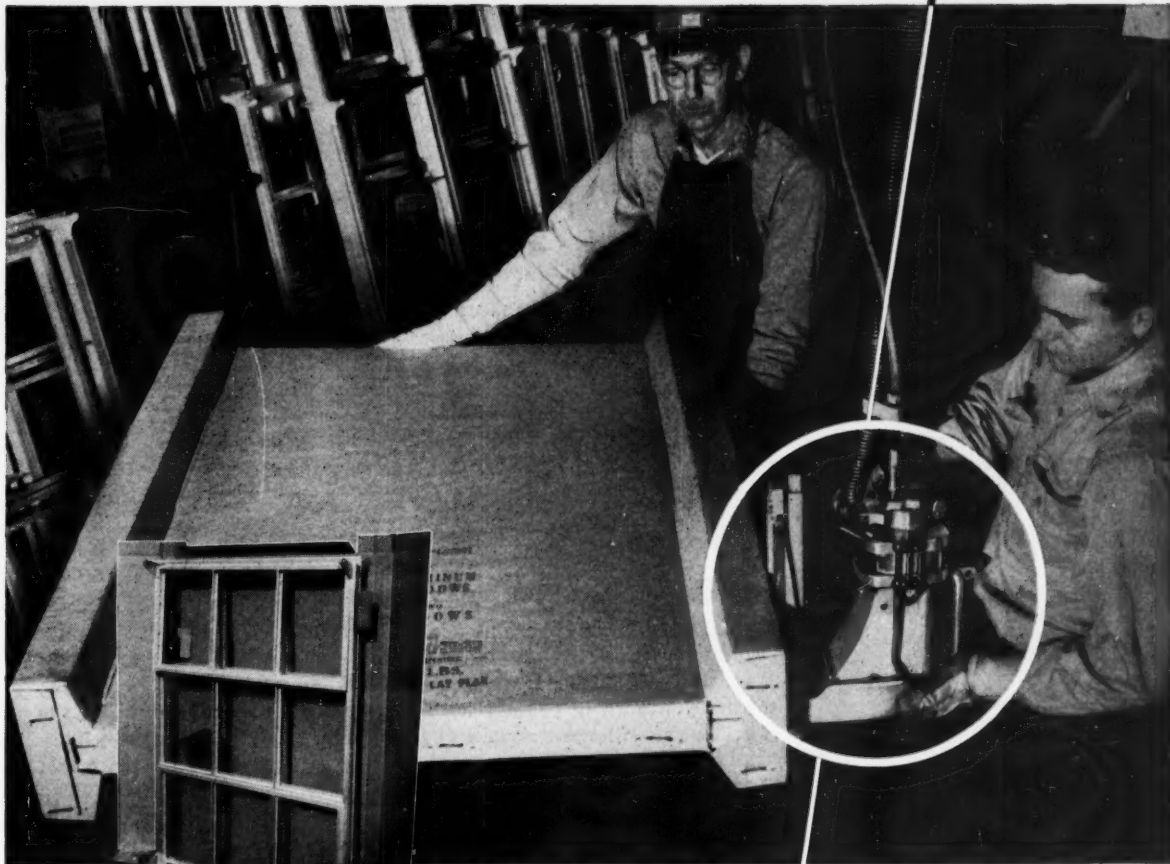
f = stress to which the cushioning material is

(Continued on page 134)



CURVE 9

REYNOLDS METALS COMPANY INSTALLS *International Staplers*



Unusual carton makes difficult closure problem for Reynolds Metals. Solution—installation of International Stapler.

because all other methods failed to do the job satisfactorily!

Reynolds Metals, Louisville, Ky., manufacture a large variety of rust proof, corrosion resistant aluminum windows that require very unusual corrugated cartons. These cartons posed a difficult closing problem, and several methods were tried with unsatisfactory results. International equipment solved this problem for Reynolds, and the reasons given by Mr. Warner Skaggs, Plant Superintendent are typical of the reasons why it will pay you to investigate International Staplers.

"We of Reynolds Metals Window Division use International Stapling Machines because:

1. they're perfect for our packing operations
2. they are easy to install
3. in the event of changes or modifications, they are easily adapted for different and various packaging operations
4. they operate quickly and efficiently

5. they feed staples automatically
6. they do not tire the worker
7. maintenance costs are low
8. hold fast, even when shipped across the country
9. all other methods of closing, such as tape and glue, have failed to do the job to our satisfaction."

Remember, International Staplers close tops and bottoms of cartons simultaneously—after the cartons are filled. Standard units will close from a few cartons per hour to a thousand per hour. Closures are secure, attractive, and pilfer-proof. The staples do not hide ad copy on the carton. There are more than twenty models to fit your exact packaging needs.

It will pay you to investigate International Staplers. Many installations have paid for themselves in a few months. Contact your nearest International Dealer or write for full details on how to reduce your packaging costs.

the Royal Family of Packaging

International Staple & Machine Company



International Staplers

808 East Herrin Street, Herrin, Illinois

Circle No. 152 on Reader Service Card for more information

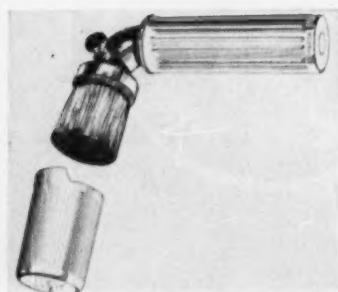
WHAT'S NEW... in Packaging and Shipping Equipment



Strapping Kit for Maintenance Men

A portable all steel strapping kit has been developed by A. J. Gerrard & Co., especially for service and maintenance men. Named "Strapping Kit No. 157", it consists of a Gerrard #100 Steelbinder tool, a #502 strap cutter and a steel case with removable tray. Suggested uses include television antenna installation, conduit fastening, pipe insulation, recooperage, sign fastening, cable splicing and stringing and any plant maintenance and repair jobs.

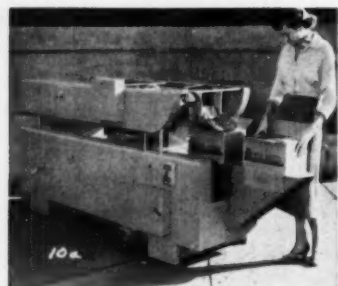
Circle No. 179 on Reader Service Card for more information



Longer Lasting Stencil Brush

Marsh Stencil Machine Co. has introduced the 90L fountain stencil brush. It was designed for those who prefer angle or L-type brushes. When used in the normal stenciling positions, the brush bristles are all in contact with the surface to be stenciled and the brush tip will wear even and last longer, according to the manufacturer. A cover can be supplied with the brush for use with fast drying or heavily pigmented inks and for keeping brush tip clean when not in use.

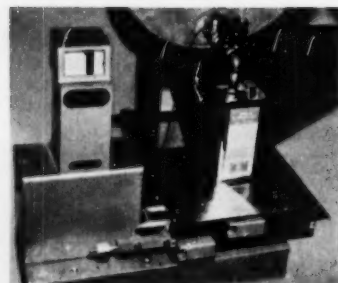
Circle No. 180 on Reader Service Card for more information



High Speed "Pint-Size" Sealer

Officials of Elliott Manufacturing Co. have billed the semi-automatic Extra-Short Case Sealer as the "pint-size sealer with the king-size capacity". Speed of the compact machine is credited to special compression rollers that give cases an extra squeeze after the glue application. Electrically heated, thermostatically controlled glue pots also add to speed. It is adaptable for cases from 6 to 18 inches wide, 9 to 24 inches long, and 3 to 20 inches high, and is available in 5 models from an 8-foot model with 200 cases per hr. capacity to a 16-foot model with 600 cases per hr. capacity.

Circle No. 181 on Reader Service Card for more information



Electronic Automatic Packaging Scale

Costly hand filling, inaccuracies from human error and fatigue are said to be eliminated by the Pennsylvania Electronic Packaging Scale, manufactured by The National Store Specialty Co. Operation is simple: weight of container and material is set on tare beam; container is placed under fill line and electric solenoid valve is opened. When pre-determined weight is reached solenoid valve in feed line closes. A simple single adjustment is required for set-up.

Circle No. 182 on Reader Service Card for more information

(Continued on page 124)



Not when you use KIMPAK* 301 !

New KIMPAK 301 is the practical solution for safe packaging of industrial chemical samples. The high absorbency feature of KIMPAK 301 plus its built-in shock absorbing characteristic make it the ideal protective agent in fragile industrial chemical packs. And KIMPAK 301 costs no more than ordinary interior packaging materials. KIMPAK 301 protects against the two major causes of breakage:

1. Shock and rough handling. Because of KIMPAK's shock absorbing properties it is an effective cushion against these shipping hazards.

2. Movement of contents within the package. KIMPAK 301 is absolutely uniform in thickness and texture from end to end and edge to edge. This assures a tight, snug pack, with the fragile containers nestled into the KIMPAK to prevent movement or vibration.

Breakage is but *one* of the problems encountered in chemical packaging. Specify new KIMPAK 301 and these problems are solved—at lower cost. For more details, contact the KIMPAK distributor in your area or mail coupon below to Kimberly-Clark Corp., Neenah, Wisconsin.

SPECIFY KIMPAK 301 TO SOLVE THESE INTERIOR PACKAGING PROBLEMS:

Leakage
Breakage
Conformability
Ease of handling
Appearance
Cleanliness

Whatever your protective interior packaging requirements, there is a Kimpak specification that does the job... better!



A Product of
Kimberly-Clark

KIMBERLY-CLARK CORPORATION
Neenah, Wisconsin

We would like to learn how new KIMPAK 301 can provide better protection at lower cost for our products. Please send complete information.

Name.....

Firm Name.....

Street Address.....

City..... Zone..... State.....

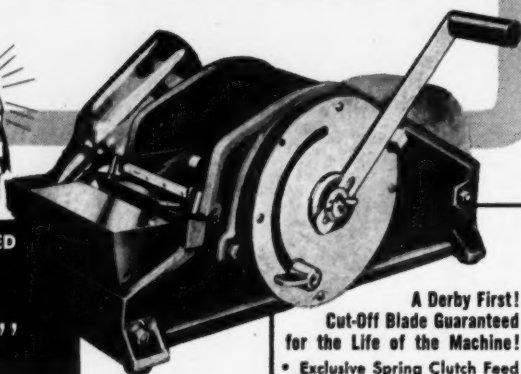
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THE MOST TALKED ABOUT GUMMED TAPE DISPENSER ON THE MARKET!



THE MEDIUM PRICED

Super
DERBY "152"



A Derby First!
Cut-Off Blade Guaranteed
for the Life of the Machine!

- Exclusive Spring Clutch Feed
- Feed Stop for Predetermined Lengths up to 30"
- Dispenses 1" to 3" width
- Auxiliary Water Reservoir
- Single Brush Moisture Control System
- Adjustable Variable Length Slotted Handle
- Interlocking Side Frames
- Automatic Tape Cut-off
- Visual Measuring Scale

PRICED FAR LOWER THAN ANY COMPARABLE MACHINE!

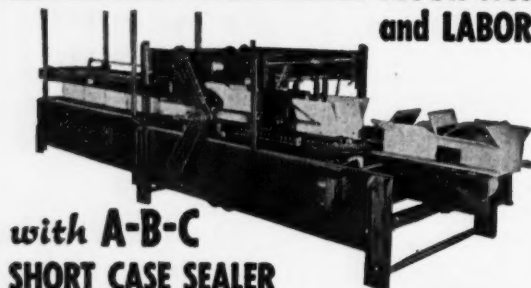
Derby spent 2 years designing, building and testing the fabulous Super "152." It's a rugged, efficient, gummed tape dispenser with so many big machine features, so many unusual Derby exclusives, that its low price is truly sensational!

See your dealer or write Dept. F

DERBY SEALERS INC. Derby, Conn.



Save
**FLOOR SPACE
and LABOR**

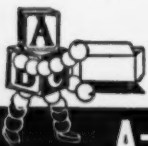


**with A-B-C
SHORT CASE SEALER**

Save two-thirds of your valuable floor space with the A-B-C Short Case Sealer—with increased packaging efficiency, more speed, less expense... Automatically glues, folds and seals either or both top and bottom flaps of shipping cases in one operation. Made in eight models to fit any production requirement. Hot air heaters dry the glue in one-half the time. Speeds up to 30 cases per minute.

TOP QUALITY CASE HANDLING EQUIPMENT

Whatever your packaging job, A-B-C has a production proved machine for you—case sealers, unloaders and unscramblers, side sealers, and hand gluers.



**WRITE NOW FOR DETAILS
AND FLOOR PLANS**

A-B-C PACKAGING MACHINE CORP.
QUINCY, ILLINOIS

Circle No. 17 on Reader Service Card for more information

PRE-PACKAGING . . .

(Continued from page 106)

and economical. Among the results were, an average time saving of 23.6% and an average increase in production of 31.4%.

Additional tests were run on a "cross-row" conveyor which was mounted to clear the tops of plants for harvesting. Each picking container held 50 pounds of fruit and was mounted to ride close to the ground. An elevator at the end of the conveyor permitted easy lifting of the fruit into adjacent trucks while the picking rate was upped to 12½ pounds per man per minute. At the shipping point the green tomatoes are graded, washed and waxed prior to being packed in 60-pound wire-bound crates for shipment to the terminal receiver.

The importance of a well-planned handling system becomes particularly evident at the terminal receiver where actual prepackaging occurs.

the **FOCAL POINT**
of technical progress in the
packaging and materials handling fields

9th
annual national
**INDUSTRIAL PACKAGING
and MATERIALS HANDLING
Exposition**

- Unique exhibit of products, equipment and materials
- Short Course Educational Program (sponsored by Dept. of Mechanical Engineering, University of Illinois)
- National Packaging and Materials Handling Competition

Plan now to attend

**CHICAGO COLISEUM
SEPT. 28, 29, 30—1954**

Produced by **SOCIETY OF INDUSTRIAL PACKAGING
and MATERIALS HANDLING ENGINEERS**

111 West Jackson Boulevard • Chicago 4, Illinois

Circle No. 120 on Reader Service Card for more information

A new grading and sorting line was recently installed for the Jack Esformes firm in the Bronx Terminal Market, New York City. Previous output of about 7000 master cartons (each carton contains 10 trays of four tomatoes) per week became inadequate when increased retail demand made it necessary that output be nearly doubled. A new line that would be able to turn out about 18,000 pounds per hour was needed. Limited space and a poorly laid out floor plan forced location of the grading and sorting line in one area and the packaging section at the other end of the building.

Pre-packaging starts after the crated tomatoes are carried upstairs on a circulating elevator. From here, they are transported on roller conveyors to be stacked close to the grading line.

Tomatoes are dumped from crates into two chutes where constantly moving aluminum fingers advance the unsorted tomatoes and allow debris and other foreign matter to drop to waste cans below. A series of aluminum rollers move tomatoes past workers (called "graders") who remove culls (ruined produce) and undersized fruit. Aluminum was decided upon for these rollers in preference to the conventional maple because it was found that wood was difficult to clean and also developed odors from tomato juices.

Handling Reduced

Another advantage of the rollers is that they turn the tomatoes over as they move along the line. This reduces handling time . . . it is no longer necessary to pick up and examine each tomato to spot defects.

After initial grading, the fruit is carried upward on rollers to the sorting line. Operators stationed along both sides place tomatoes onto one of three narrow conveyor belts which are vertically located, or allow them to pass, depending upon their stage of ripeness.

Limited floor space made a lengthy line impractical, therefore, a conveying system that consists of three neoprene belts tiered one above the other midway between two rows of workers, was developed. The top belt carries ripe tomatoes to a "transport" con-

53 YEARS OF BETTER BOXES — "THE American WAY"

What you
should know
about the new
American

Pressure-Pack



Gas furnace (right). Clothes dryer attachment (above).

Palletized bottom (above) permits fork-lifting from all 4 sides, ideal for handling, stacking, storing anywhere. Complete pack—no "accessories". Paper cover optional.

Latest type American "Wirebounds" replace cartons Save manhours, damage costs for appliance shipper

No more "concealed" shipping damage! This gas furnace and clothes dryer are "centric pressure-packed" in new American Open-Type Wirebound Crates. By "pressure-packing" the base, the rest of the unit is protected from harmful contacts. It travels as safely as though it were stationary—all the weight cradled snugly at the bottom where it belongs. "Palletizing" simplifies handling of the furnace which weighs approx. 400 lbs. American, individually designed, "Engineered Protection" saves the shipper hundreds of dollars! Wrap-around assembly is quick, easy. Twist-type closures are sealed and tamper-proof. Let American quote on your container needs now! Send your product for a "sample" packing. No Cost or obligation to you. Write or call.

★Thousands of acres of timber, three veneer mills, two great plants in Cleveland, Ohio, and Marion, S. C.

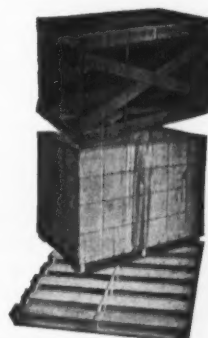


THE American BOX CO.

1909 W. 3rd Street Phone: SU 1-4900
Cleveland 13, Ohio

Marion,
South Carolina

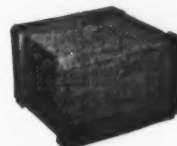
Circle No. 5 on Reader Service Card for more information



American Wirebound Crate,
Tote Box, Pallet



American Fibreboard Box



American Nailed Wood Box

BAG CLOSING MACHINES FOR EVERY NEED . . .



...from UNION SPECIAL'S
Complete Line! . . .

FOR lower production costs . . . stronger, neater closures . . . ability to get out rush orders in a hurry, you can't beat Union Special Bag Closing Machines! Specially built to stand up under heavy production schedules, these machines provide the high output rates needed to meet modern competitive conditions.

In the Union Special line, it's easy to find the right unit to meet your particular requirements. ASK FOR RECOMMENDATIONS.

Ask for Recommendations

UNION SPECIAL MACHINE CO.
415 N. Franklin St., Chicago 10, Ill.

Gentlemen: Without obligating me, please furnish information on bag closing equipment to handle the following production:

Kind of bags used? _____
 Filled weight of bag? _____
 Material being packed? _____
 Maximum bags per minute? _____
 Check-weighing required? _____
 Conveyor required on Machine? _____
 Power: ☐ D.C., ☐ A.C., Volts _____
 Phase _____ Cycles _____
 Name _____
 Company _____
 Address _____

Circle No. 127 on Reader Service Card
120

PRE-PACKAGING

Continued

veyor line (a 10-inch wide belt) which conveys them to the over-wrapping section at the opposite end of the building. The middle and bottom belts are for "pinks" and "turns", respectively and each terminates into a chute which, when filled, empties directly into tote boxes for return to the ripening room.

The three-tier construction of the grading line has provided three benefits: production is speeded up because workers can sort with both hands and place tomatoes into the proper belt without moving their positions; valuable floor space is conserved; graders do not have to waste time with excessive handling of tote boxes.

For Smaller Volume Operations

Only a large volume tomato pre-packer can make efficient use of a line comparable in size to the one described above. For small

and medium-size operations production requirements are the determinants in the conveying line which is installed. For instance, a one-sided version of the Esformes line was designed for a medium-size packer whose volume had to reach about 10,000 pounds of tomatoes graded and sorted each hour. This line was constructed against a wall and had features which were identical with those of the higher volume installation, plus one improvement . . . a steel divider was placed above the aluminum rollers to allow sorters to dispose of cull tomatoes that had passed initial inspection of the graders.

According to a recent U.S. Department of Agriculture survey, six different ways are used to supply crates of tomatoes to the grading and sorting line. They are:

1. Manual transfer.
2. Hauling on hand trucks.
3. Hauling on skids.
4. Conveyor systems.
5. Combined manual transfer and the use of skids.
6. Combined use of skids and conveyors.

Cut Shipping Paper Work and Speed up Addressing Shipments

WITH THE NEW WEBER TAB-ON STENCIL

Before products can be shipped paper work must be prepared and containers addressed. The Weber Tab-On Stencil helps do both in less time, with less labor. This new stencil adheres to your invoice or bill of lading over "ship-to" area. In one operation forms and stencil are typed with "ship-to" address. Stencil just clips on Weber hand printer ready to address labels, tags or containers . . . addresses 50 per minute. Saves typing time, eliminates errors . . . and it's low cost, too!

another

Weber

system



Weber Tab-On Stencil is prepared automatically with typing of invoice or bill of lading.



With Weber Tab-On Stencil and hand printer, you can address labels, tags or containers at a rate of 50 per minute.

Send For FREE Detailed Information

WEBER LABEL AND MARKING SYSTEMS Div. of Weber Addressing Machine Co.
Mt. Prospect, Illinois Dept. F-84

Circle No. 135 on Reader Service Card for more information

FLOW • AUGUST, 1954

The last method is regarded as one of the better methods to be used alternately or in combination to avoid the difficulties of multi-story operation. An average of .024 man-hours are required to move 100 pounds 100 feet.

Improved methods of handling fresh fruits and vegetables are constantly enabling pre-packagers to reduce labor costs and increase production. For instance, one citrus association manager has estimated that installation of an overhead conveyor in his packing operations will eliminate enough manual handling to pay for the conveyor within two years. In another instance, the installation of a circular cutting table for uninterrupted cutting of "hands" of bananas has resulted in great savings.

All down the line, the story is the same . . . "mechanize to profit . . . and if there is no equipment that can do the job, have it designed. Once it proves itself in one plant, other plants will want it and with each new installation, additional improvements will result."

HIGHLIGHTS . . .

(Continued from page 39)

volume purchases—with which to seek lower rates from carriers as well as to plan for receipt and storage.

3. Exercises, through purchase order, in the control of routing and type of transportation to suit company needs.

4. Assists the sales department by taking advantage of every possibility for economical handling and transportation to compete to the best advantage. Compiles freight rate studies to help the sales and advertising departments decide on areas where the firm's products can compete on best terms.

5. Supervises the classification of freight for transportation—to know what products take what rates.

6. Files and collects of claims against carriers for loss and damage of merchandise in shipment.

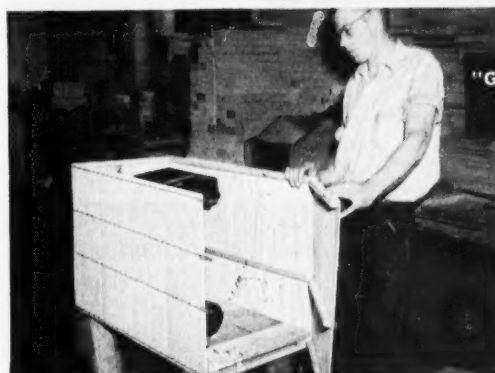
Hard-to-Pack Product?

Call a
"General" Container Engineer!



OLD PACKAGING METHOD

It took a heavy nailed wooden box, ten pieces of interior blocking, 71 individually driven nails to prepare this water level control valve for shipment.



"GENERAL ENGINEERED" METHOD

3 steel straps tie the valve to specially designed base. Sturdy lightweight wire-bound mat wraps around base. Top is secured by driving just 4 nails.

RESULTS:

**PACKING TIME CUT 60%
SHIPPING WEIGHT CUT 10%
CONTAINER COSTS CUT BY \$1,500 TO \$2,000 A YEAR!**

Those were the results on *just one item* when Fisher Governor Company of Marshalltown, Iowa, called in a General Container Engineer. Our field engineers, backed by well-staffed, well-equipped laboratories, give you the *best* packaging at the *lowest* cost. Write for your free copy of "The General Box"—or have one of our engineers call.

Engineered Containers for every shipping need

Factories: Cincinnati; Denville, N. J.; East St. Louis; Detroit; Kansas City; Louisville; Milwaukee; Prescott, Ark.; Sheboygan; Winchendon, Mass.; General Box Company of Mississippi; Meridian, Miss.; Continental Box Company, Inc., Houston.

General Box

GENERAL BOX COMPANY, 1857 MINER STREET, DES PLAINES, ILL.



"We don't need gloves!"

when hand wrapping with

Flexible SOF-RAP

You can speed up wrapping production with low cost, lightweight SOF-RAP. Men work "bare-handed" with no danger of cuts or bruises — no slow-downs from clumsy gloves. SOF-RAP contains no harsh cutting glues or silicates. That's why, too, it provides the perfect cushion protection for your product. Investigate TYPE C for interior cushion protection from shock and bounce and TYPE B for permitting slippage and preventing friction or abrasion damage. In sheets, rolls, tubes and bags.

FREE, HELPFUL BOOKLET,



DOOR CONTROLS . . .

(Continued from page 94)

where it provides truck access, through a small work room, to the loading platform. Operations carried out in the small workroom require that a big doorway to the platform be open at all times.

This arrangement adversely affected the plant's air conditioning system during both summer and winter. And during the warm months it was difficult to prevent the entry of winged insects.

Installation of door controls solved both problems. There are two push button stations for control of the door by fork truck operators. One of these is shown in the photograph; the other is located further inside the building.

Above the doorway are two electric fans which start automatically when the door opens, stop when it closes. The downward stream of air from the fans has done an effective job of repelling insects.

Door equipment can be applied to most of the present doors: slid-



. . . and YOU TOO can save valuable man-hours in YOUR SHIPPING AND RECEIVING ROOM with a

PORTER 8T STRAP and BOX WIRE CUTTER

This handy tool, especially designed for receiving and shipping room use, has a pointed lower jaw which slides under the tightest binding. The thin, flat blade prevents damage to container. Keeper holds strapping and wire straight in jaws for pre-cutting. Notch in lower blade keeps wire from slipping. Spring opens jaws for faster cutting. Thumb lock keeps them closed when not in use. Made of Alloy Steel with cushion comfort grips to prevent blisters and keep hands from slipping. Cuts Steel Strapping up to 3/4" x .035 and Round Wire Binding up to .080.

Start now! Equip each man in your receiving and shipping departments with one of these cutters. Order from your distributor or send direct to us and we will have a nearby distributor fill your order. List price \$4.50...each.

HKP H. K. PORTER, Inc.
74 Foley St., Somerville 41, Mass.



Counterboy SEALED!

Counterboy ADJUSTABLE MOISTENING CONTROL:

- Protects your Product • Saves your tape • Saves your labor costs
- Improves your carton's appearance • Impresses your customers

The counsel of Better Packages' 70 Counterboy field experts on materials and methods is yours for the asking. They can help you:

- Reactivate all the glue on your sealing tape • Select special purpose tapes
- Train employees to apply tape correctly
- Saves time and tape • Systematize your tape closure procedure



E. G. ARTZ, typical Counterboy man, has an enviable record of helping management utilize their shipping cartons as effective selling tools. His broad packaging knowledge is based on more than 29 years working with shippers. Currently, his headquarters is at Milwaukee, Wisconsin.

Your Counterboy man is listed in the yellow pages of your phone book. Call him today.



BETTER PACKAGES, INC.
PLANT NO. 1—D, 253 CANAL STREET, SHELTON, CONN.

FREE WRITE FOR TECHNICAL BULLETINS:

- ☐ #2 Tape Moistening Requirements for Various Carton Surfaces
- ☐ #3 Gummed Tape Glues and Adhesives
- ☐ #7 Superiority of Gummed Tape Closure
- ☐ #9 Tape Applications — Building Strength from Weakness
- ☐ #11 Hot Water versus Dry Glue
- ☐ #12 Carton Sealing — The Easy Way
- ☐ #13 Parcel Post Wrap
- ☐ #16 Tape Widths and Weights

☐ Send us a Counterboy man to survey our Methods and Materials

Company _____
Signed _____ Title _____
Address _____
City _____ Zone _____ State _____

ing, single or pairs; swinging, either single or double; and bi-folding, single or in pairs. These doors can be operated independently, or synchronized with each other. A combination of any of the three also is possible. For instance, one swinging door and one sliding door can be synchronized to give the desirable opening feature and yet handle the traffic pattern efficiently.

Types of Controls

Both electric and pneumatic operators are available. Photoelectric, magnetic and pressure controls are used for completely automatic door operation. For lower cost, semi-automatic operation, ceiling pull-cord switches and safety delays are utilized. For example, a door opens when a ceiling pull-cord is actuated and remains open until the person or vehicle passing through the doorway is out of a photoelectric safety beam, then closes automatically. Pull cords can be equipped with time delays for simple and most economical controls.

One automatic door opening unit has been designed especially for the food, fruit and juice industries. It consists, essentially, of a bell crank lever attachment which, added to the controls, maintains a tightly shut refrigerator door without latching, thus permitting practical application of automatic door equipment. The power of the operator is multiplied by the attachment which holds the door closed against the frame with a pressure of 150 pounds per square inch or more. The lever attachment's force is applied to the center of the door to equalize pressure around the perimeter.

In order to permit automatic operation, an existing latching device on the refrigeration door must be made inactive. It can be made permanently inactive and the door can be kept closed during the night by the pressure of the operator, or where desired the operator can be shut off and the door kept closed until the next workday.

For assistance with data and pictures for this article, FLOW thanks Clark Door Company, Inc., and The Magic Door Division, The Stanley Works.



The Right Start for Your New Product: Gaylord Boxes for Safe Shipment

It's an exciting moment in any factory—that moment when the new product is ready for launching.

So good to know at this time that the product is starting out right in containers which guard against damage down the line. Developed with the same care as you give your product, Gaylord Boxes combine proved design with quality board to give you superior protection.

You owe it to yourself—and to your products, new or old—to investigate Gaylord Boxes. Call your nearby sales office.

Gaylord Container Corporation

GENERAL OFFICES
SAINT LOUIS, MO.



SALES OFFICES
COAST-TO-COAST

CORRUGATED AND SOLID FIBRE BOXES • FOLDING CARTONS • KRAFT BAGS AND SACKS • KRAFT PAPER AND SPECIALTIES
Circle No. 61 on Reader Service Card for more information

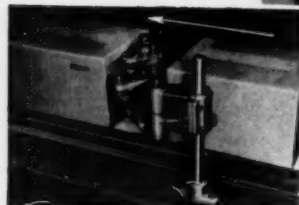
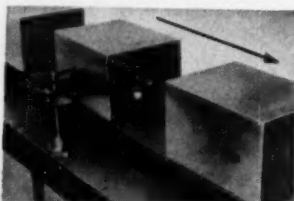
Circle No. 68 on Reader Service Card for more information

For quicker warehouse stacking, quicker identification **MARK ALL 4 SIDES OF CASES AUTOMATICALLY...in a single pass**

New ROLACODER units attach to conveyor or sealer... imprint code-dates, lot numbers on all 4 panels of cases simultaneously... without requiring cases to be turned.

ROLACODER **500** MARKING MACHINE

Imprints front and one side panel simultaneously



ROLACODER **200** MARKING MACHINE

Imprints rear and other side panel simultaneously

Descriptive literature sent on request

Friction-operated ROLACODER machines do the marking job automatically... save the cost of manual stencilling or stamping. They use interchangeable rubber type for quick, easy changing of copy... hold enough ink for eight hours or more of continuous operation.

Gottsch

ADOLPH GOTTSCHO, INC.

Hillside 5, N. J.

50
Years of
Leadership

In Canada: RICHARDSON AGENCIES, LTD., Toronto & Montreal



- A truly portable bag closer... weighs only 10½ pounds.
- Lowest priced bag closer on the market.
- Requires no installation... plug into any outlet.
- Handles textile and paper bags.

Thoroughly-proved by thousands of users all over the world to be practical and efficient under varying conditions for constant or occasional use in large or small plants.

Address inquiries to:

DAVE FISCHBEIN COMPANY, Industrial Sewing Machinery

Dept. 48, 38 Glenwood Avenue, Minneapolis 3, Minnesota
Circle 144 on Reader Service Card for more information

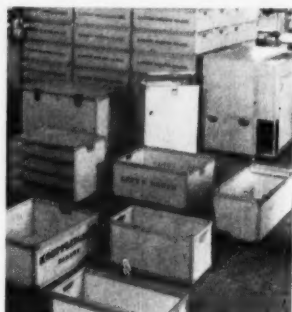
124

PACKAGING AND SHIPPING NEW EQUIPMENT . . .

(Continued from page 116)

Custom-made Fiberglass Containers

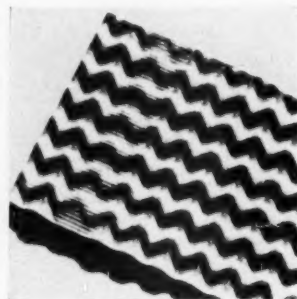
Fiberglass reinforced plastic containers fabricated to any specifications have been introduced by the Fiberglass Box Co., Inc. Basic containers are made of fiberglass reinforced sheets of polyester resin (the same plastic that is used in the manufacture of plastic automobile bodies). The sheets are riveted to aluminum or galvanized steel frameworks. Completed containers are said to be unaffected by moisture, rust and corrosion proof light weight, durable, dimensionally stable, easily cleaned and sterilized, low conductors of heat and cold, dent proof, chip proof, crack proof and safe to use within a temperature range of -60° F. to 300° F. Custom-built containers are reported to be in extensive use as shipping containers for foods, tote boxes for small parts and food products, insulated shipping containers, bread boxes and a host of other special uses.



Write 183 on Reader Service Card for more information

"Live" Cushioning

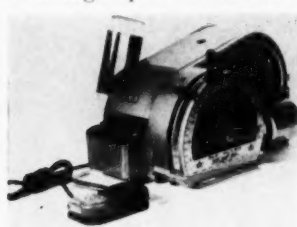
A single sheet cushioning material formed by combining tremendous pressure and temperature to forge sheet fibres into a tough permanent cushioning crimp has been developed by Sherman Paper Products Corp. The tremendous force which puts the cushioning into the fibre is said to keep the fibres "live" and to provide protection to fragile items over long transportation hauls in dry or damp weather. As seen in the accompanying photograph, the deep-set crimps of the material remain permanently set even after a sheet has been run through a heat sealer. Called Sherm-A-Pak, the material is available in virgin and processed kraft in a variety of weights. It may be had in rolls, sheets or special die-cuts for custom packaging. For a free sample, use the number below.



Write 184 on Reader Service Card for more information

Dual Length Dispenser

Automatic delivery of either one of two pre-set lengths of tape from six to 70 inches, accurately measured and properly moistened, is said to fit the National "88" Electric Dual Length Tape-per into high-speed industrial production systems.



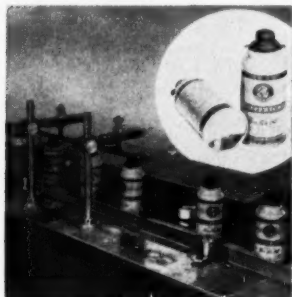
Two settings on the patented Tape-Mizer, corresponding in color to foot controls for the dispenser, regulate the length of tape to be moistened and dispensed. If a carton to be sealed requires 24

inches of tape for width and 36 inches for length, the operator loosens the lock at the side of the machine and sets dual selector levers for those two lengths of tape. Then he tightens the lock. The red foot pedal releases 36 inches of moistened tape and the yellow foot pedal 24 inches of tape. Both of the operator's hands are free for application of the tape to the box. Other features claimed for the machine are: visual positive automatic moistening control, adjustability for all brands and types of tape; unbreakable plastic water bottle; a heated tank for warm water moistening, assuring better sealing with less effort; a self-sharpening hardened steel knife that requires no adjustment for cutting reinforced tape. It handles standard diameter rolls of paper, cloth and fiber-reinforced tape from one inch to four inches wide. Manufacturer is the Package Sealing Division of Nashua Corp.

Write 185 on Reader Service Card for more information

Marking on Recess Bottoms of Spray Cans

Successful application of its "Markocoder A" machine for printing code-dates and other changeable legends on the recessed bottoms of pressure-packed cans as part of the production



operation has been announced by Adolph Gottscho, Inc. It is claimed that the new machine may be installed in-line with existing mechanized filling, capping, cartoning or other packaging machines. The Markocoder receives cans in a con-

tinuous stream from a preceding production operation, prints them, then discharges them to the next station in the line. Operation is automatic and can be at varying rates up to 150 cans per minute to match the speed of other machines in the line. Since the coding device is self-synchronizing, it is not necessary that cans be fed to it with regular spacing or timing.

Write 186 on Reader Service Card for more information

How to Protect Your Goods

... in shipment ... in storage

Get this
FREE
24-page
Shipping
Guide

Packed full of
money saving
ideas.
Send coupon
below



Here are the facts on how a super-strong, waterproof paper may be your answer to safe, lower cost shipping and storage. Read how rugged Fibreen, in rolls or blankets, gives new, low-cost protection from rough handling, water, moisture, dust, grit and staining. See how it provides protection for machinery, tools, steel, aluminum, rope, textiles, furniture, abrasives, leather, rubber and many other products.

The coupon below may help
you make important
shipping savings for
your company!
Send it in
today.



AMERICAN SISALKRAFT CORPORATION

Dept. F-8, Attleboro, Mass.

Please send fact-filled Fibreen booklet on how to save shipping costs.

Name

Title

Co. Name

Co. Address

City Zone State

Chicago 6, Ill. • New York 17, N. Y. • San Francisco 5, Calif.

Circle No. 8 on Reader Service Card for more information

**"We cut our
packaging costs . . .**

"50%"
—PYRAMID MOULDINGS, Inc.
"30%"
—SUPERIOR SLEEPRITE CORP.
"85%"
—McKEE DOOR MFG. CO.
"7.7%"
—LYON METAL PROD. CO.
"50%"
—ROSE-DERRY, CHICAGO
"30%"
—PHEOLL MFG. CO.

with **TAPE-STRAP** gummed filament tape"

Shippers of products ranging from nuts and bolts to mattresses, testify to the way Tape-Strap reinforcement cuts packaging costs.

If you now reinforce paperboard cartons with pressure-applied strapping, you probably can cut packaging costs and provide better protection with Tape-Strap. Or, you may be able to switch from more expensive containers to paperboard cartons, reinforced with short strips of super-strong Tape-Strap.



Changing to this neatly Tape-Strapped carton cut packaging costs 50% for Rose-Derry, Chicago.

Why not get the story of safer, easy-to-use Tape-Strap? Write for free sample roll and complete data.

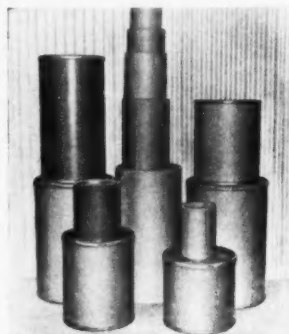
LEADERS IN THEIR LINE

MID-STATES Gummed Paper Company
2515 S. DAMEN AVE., CHICAGO 8, ILLINOIS
New York • Boston • Philadelphia • Cleveland • Denver • Milwaukee • Atlanta • Los Angeles

Circle No. 98 on Reader Service Card for more information
126

Durable, Economical Fiber Drums

Extra strength and resiliency, simple yet effective closure, safe and easy handling and quick, compact stacking are features cited for a new line of fiber and fiber-metal drums developed by Rheem Mfg. Co. To meet various size and strength requirements, the Rheem all-fiber containers are made in sizes from one to 32 gallons, and the fiber-metal drums come in capacities ranging from five to 60 gallons. Diameters range from eight to 32 inches and lengths from seven to 42 inches. Different sizes can be nested to reduce shipping costs and storage space. The following types of closures are available with the drums . . . stitched tops and bottoms fit snugly and flush into the all-fiber drums and are stapled or taped in place . . . slip or friction tops which are flush with the diameter of the drum are for fiber-metal drums . . . Rheem Lox ring closure which provides positive locking for protection of contents.



Circle 187 on Reader Service Card for more information

Bag Packer-Sewer

The B-B Packer, designed and built by Bemis Bro. Bag Co., is recommended for industries packing products which do not require shaking or augering. It will pack and close 50 to 100-pound cotton, burlap or multiwall paper bags at a rate of up to 12 bags per minute, depending on the scale which is used and number of operators. The unit consists of a scale and feeder; a pneumatic bag holder mounted on a balanced pedestal that is adjustable for large or small bags; and a belt conveyor which can be had in three types . . . flat belt, V-belt, or Vee-Trof. The packer can be operated by one or two men, depending upon the speed of production desired. The bag clamp is designed to protect gussets of multiwall bags, thus eliminating necessity for a third man for re-forming of gussets before they enter the sewing head.



Circle 188 on Reader Service Card for more information

FLOW • AUGUST, 1954

New Load-Securing Development for . . .

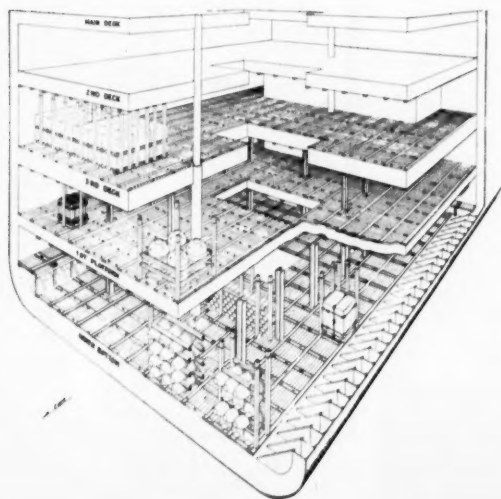
Faster Handling on Cargo Ships

AN important advance in the science of securing cargo aboard ship has been developed for the U.S. Navy. Designed for a Navy Munition ship by Evans Products Co., the new development is said to provide permanent, built in, yet adjustable bracing.

An installation has been sea-tested in one hold of the USS Diamond Head and consists of a series of adjustable aluminum stanchions which extend between a pattern of fixed steel channels welded in four-foot squares to the deck and on the overhead. On top of these fixed channels, on both deck and overhead, adjustable perforated channel sections which can be locked in position are installed.

The upright stanchions latch-lock in place into the perforation of the movable channel sections. The load can be braced at one-and-one-half inch increments in any direction throughout its cubic area. To provide a smooth deck flooring, the square areas within the deck channeling are timbered flush with the top surface of the fixed channels.

The new cargo-storing equipment is part of the Navy's program to speed up material handling aboard ship. Also being evaluated are several new types of fork lift trucks, a ship's elevator system and special palletized loading.



CUT COSTS FOR **Bag Packing** with

AUGER-MATIC

Fills and Weighs...All in One Operation



NO DUST

Cut production costs by packing your product in modern self-closing bags... the AUGER-MATIC Bag Packer fills them quickly to any weight desired... shuts off automatically.



NO WEIGHING

Valve Bags fit snugly on AUGER-MATIC spout so no dust escapes... keeps bags clean... eliminates costly tying or bag closing equipment.



**NO SEWING...
NO TIEING**

AUGER-MATIC Bag Packer is equipped with multi-twist auger... packs any materials from powder to pellets. Easily moved from one filling point to another.

Send for descriptive literature

E. D. CODDINGTON MFG. CO.

5062 NORTH 37TH STREET • MILWAUKEE 9, WISCONSIN

KING-SIZE NESTIER

**NOW
AVAILABLE!**

NesTier meets industry's demand for a materials handling box midway between a tote pan and a heavy corrugated bin-type container. The new No. 360 is sturdily constructed of 14-gauge steel, is 36" long, 14" high, 16½" wide. Filled units tier in rigid stacks . . . empty boxes nest without sticking or jamming to save valuable floor space.

NesTier materials handling boxes and baskets are available in a variety of sizes — 12" long and larger — to fit into your materials handling picture from stockroom through assembly and production to shipping dock.

C-186-DN

WRITE TODAY FOR
COMPLETE DETAILS

NESTIER

THE CHAS. WM. DOEPKE MFG. CO., INC.
8836 Blue Ash Road • Rossmeade, Ohio

Flow Receives Safety Award



FLOW's editor, Edward H. Leighten, left, receives the National Safety Council's *Public Interest Award* plaque from H. H. Gorman, president of the Greater Cleveland Safety Council, acting for Ned H. Dearborn, National President of the Council, at an Award Luncheon on June 23.

The FLOW issue for which the award was made was December, 1953. It included 27 feature pages on safety in relation to material handling principles and equipment. The Award is "made annually to public information media for exceptional service to safety".

**GOES OVER
BIG for
wheeling
and dumping
heavy materials**



Specify Sterling No. 119
HEAVY-DUTY CART
Pneumatic-tired wheels or steel wheels

FIFTY years ago Sterling men had faith that wheelbarrows would "go over big" if made so rugged they would cost users *less per year*. Response from men of industry proved this Sterling idea to be right! Through the years, Sterling progress has provided wheelbarrows made the way *you* needed them . . . easy-wheeling, longer-lasting, to cost you less per year, designed for the specific work *you* do with wheelbarrows and carts. See the whole Sterling line.

Write for
Bulletin or
see nearest
dealer.

Some areas open
for dealerships.
Write . . .

STERLING WHEELBARROW CO., Milwaukee 14, Wis.

Sterling
WHEELBARROWS



Look for this Mark
of STERLING Quality

GOLDEN ANNIVERSARY
1904-1954
A HALF CENTURY
OF PROGRESS

Check your Tackle Blocks
for best service. Worn
sheave grooves, bearings
and pins are expensive.

**LOWER
HANDLING
COSTS**

• Blocks correctly
designed and
engineered for
your specific op-
eration saves
money.

Our engineer-
ing services are
available for
your specialized
needs.

Over a quarter
century of serv-
ice.

Send for our
complete catalog
today.

MADESCO TACKLE BLOCK CO.
EASTON, PA.



MADESCO
BLOCKS

HAE-M592-2-54

Circle No. 122 on Reader Service Card for more information

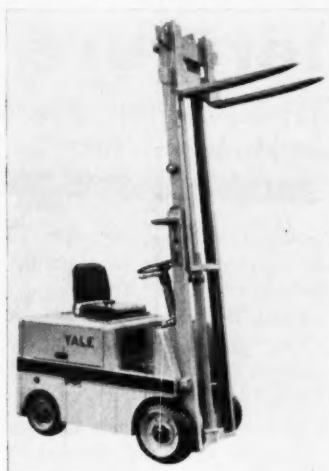
Circle No. 86 on Reader Service Card
FLOW • AUGUST, 1954

Compact Gasoline Fork Truck

A new series of compact gasoline fork lift trucks with a high power-weight ratio has been announced by The Yale & Towne Manufacturing Company. Called the G-52 series, the trucks are available with pneumatic or solid tires in 2000, 3000 and 4000 pound capacity models. The manufacturer says the new line of trucks points the way toward the fork lift truck design of the future—claiming they are smaller, more powerful, more maneuverable, more efficient and more versatile models. The 2000 pound unit can negotiate a right angle corner in a 57 inch aisle or right angle stack in a 112 inch aisle. Built on a 43 inch wheelbase, its overall length is 72 inches and overall width is 32½

inches. Powered with a 25 hp engine, it reaches a top speed of 8 mph through a transmission with two speeds forward and two speeds reverse. It is available with fluid coupling, and comes equipped with the same drive and differential used on larger models.

Circle No. 190 on Reader Service Card for more information



Easier PALLET HANDLING
With The New Model "D"

marforge

PALLET LOAD LIFT

THE ONLY PALLET LIFT TRUCK WITH AUTOMATIC RETRACTABLE REAR WHEELS

Handles loaded and unloaded double-faced pallets without banging the bottom boards . . . without skidding or dragging the pallet. To handle both single and double-faced pallets use Marforge Model "SD".

WRITE NOW FOR FULL DATA

Market Forge Company
MATERIALS HANDLING DIVISION
35 Garvey St., Everett 49, Mass.

AUXILIARY WHEELS

RETRACTABLE REAR WHEELS

56 YEARS IN THE MATERIALS HANDLING BUSINESS

Visit Us At The "Packaging & Materials Handling Show" September 28-30, Chicago.

Circle No. 93 on Reader Service Card for more information

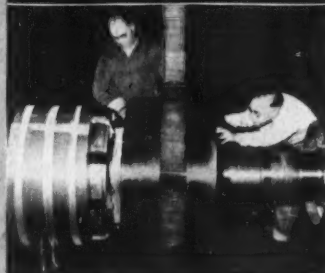
FLOW • AUGUST, 1954

GRIPPER

WOVEN WIRE

SLINGS

SAFER—
MORE VERSATILE



SAFER—because each sling is pre-tested to rated load capacity before shipment, pre-tested with a 5-1 safety factor. Moreover, the spiral loop construction of Gripper slings guards against sudden breaks in use . . . specially heat treated handles provide extra strength at the hook.

MORE VERSATILE—use your Gripper sling for light or heavy, bulky or compact loads of any material or parts. Fully flexible sling body grips completely around even small radius loads in choke hitch. Broad, flat sling body provides wider bearing surface for greater load stability in either basket or choke hitch.

AVAILABLE—in standard lengths and widths with capacity up to 100,000 lbs. Special sizes and capacities on request. For details, see your mill supply, materials handling or safety equipment distributor. Or, write direct for free catalog and name of nearest distributor.



The Cambridge Wire Cloth Co.

Dept. W • Cambridge 8, Md.



WIRE CLOTH

METAL CONVEYOR BELTS

SPECIAL METAL FABRICATIONS

OFFICES IN LEADING INDUSTRIAL AREAS

Dealers—write for open territory data.

Circle No. 33 on Reader Service Card

129



in useful **FREE literature**

These publications, written by experts, are FREE. Indicate your choice on the self-mailing Readers Service Card.

Lifting Crane

Baldwin-Lima-Hamilton Corporation, Construction Equipment Division, announces the availability of descriptive bulletin 73SC-B covering its recently introduced type 703-SC lifting crane, available on crawler, truck or wheel mount.

Circle 191 on Reader Service Card

Simplified Steel Shelving:

Borroughs Manufacturing Company announces a new development in simplified steel shelving, complete details of which are described in a colorful catalog. Each individual unit is complete within itself and can be moved independently. Said to be quickly and easily assembled.

Circle 192 on Reader Service Card

Magnetic Separators:

Detailed information on the construction and uses of magnetic separators for fast and easy handling of steel sheets and plates is included in bulletin 1053 published by Basco Manufacturing Company.

Circle 193 on Reader Service Card

V-Belt Slidefilms:

The second group in a series of educational 35mm sound slidefilms for industry is available through Allis-Chalmers General Machinery Division. Engineering principles, installation, maintenance and check characteristics are depicted.

Circle 194 on Reader Service Card

Three "Dynamotive" Trucks:

Three models of the "Dynamotive" gas fork truck with electric transmission are described in a brochure published by Automatic Transportation Company. Complete specifications are given for the 4000, 5000 and 6000 pound capacity models.

Circle 195 on Reader Service Card

Increased Storage Space:

It is claimed no major investment is necessary to increase present storage space when you use the pallet-rack system of Brainard Steel Division, Sharon Steel Corporation. Brochure 8-002 gives details.

Circle 196 on Reader Service Card

Pneumatic Stretchers:

Bulletin AD-146 from Acme Steel Company illustrates and describes standard and pusher bar pneumatic stretchers. The tools have been developed for production line strapping applications where pre-determined and uniform strap tension is required. Simplicity of operation is said to reduce operator fatigue.

Circle 197 on Reader Service Card

Parts Boxes:

Bulletin 550 published by Brumeler Steel Products Corporation pictures and describes parts boxes designed to move and stack materials efficiently. Said to save labor and space, the units come in a variety of shapes and sizes.

Circle 198 on Reader Service Card

Four-Way Savings:

A new brochure from Atlas Plywood Corporation describes a 4-way savings which may be achieved through use of its new shipping container, termed "Ply-Fold".

Circle 199 on Reader Service Card

Factory Doors:

Rubber-covered factory doors, designed to withstand the pounding and bumping of industrial lift trucks, are illustrated and described in bulletin 52 by American Hard Rubber Company. The doors are said to eliminate the need for expensive door-opening devices and bumpers, save heat losses, and add to worker comfort.

Circle 200 on Reader Service Card

Integrated Line:

Tilt and non-tilt types of floor trucks are featured by the All Steel Welded Truck Company. A new approach of high quality and low cost is claimed by the manufacturer.

Circle 201 on Reader Service Card

Product Protection:

Lower Packaging costs, improved product protection and extra display value are three benefits claimed by Hinde & Dauch for its packaging designs. The article appears in "Package Laboratory News", a quarterly publication of the manufacturer. The bulletin offers a free packaging guide titled "Pack to Attract".

Circle 202 on Reader Service Card

Equalizing Slings:

Brochure 354 published by The Caldwell Company colorfully describes the company's model 52 Adjust-A-Leg equalizing and locking sling. As the tension of the lift comes on, the legs automatically adjust themselves and frictionally lock in position.

Circle 203 on Reader Service Card

Something New:

A brochure from Fiberglass Box Company tells of a new way of solving material handling problems through the use of fabricated fiberglass containers. The units are custom made to specifications.

Circle 204 on Reader Service Card

Dock Covers:

A colorful brochure from Capco Company gives information on dock covers designed to protect loading operations in any weather.

Circle 205 on Reader Service Card

Conveyor Facts:

Cincinnati Automatic Conveyor Company gives facts you should know about overhead chain conveyor in catalog 531. The conveyor is said to be engineered for speed, strength, long life and economy.

Circle 206 on Reader Service Card

Expendable Pallets:

The "Stowaway" pallet manufactured by Continental Can Company, Inc. is detailed in a brochure recently published by the company. Advantages and specifications are listed.

Circle 207 on Reader Service Card

Material Handling News:

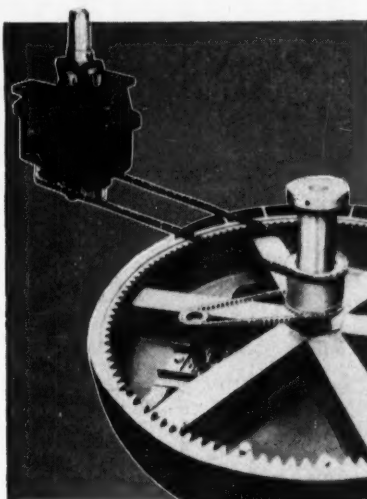
The spring issue of Clark Equipment Company's "Material Handling News" is off the press. The magazine contains several interesting features on how time and money is being saved through the use of the firm's equipment.

Circle 208 on Reader Service Card

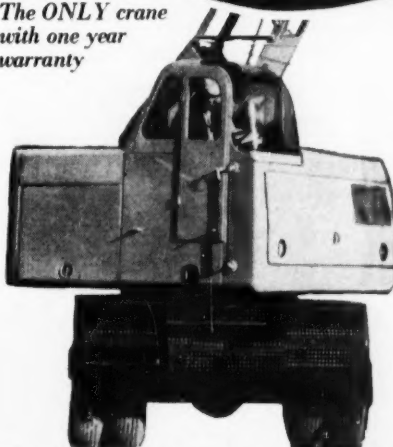
REVERSIBLE STEERING

Another Exclusive Feature with every

COLES CRANE



*The ONLY crane with one year warranty



- LOW MAINTENANCE
- LOW GAS CONSUMPTION (1 Gal. per hr)
- NO CLUTCHES
- NO GEARS TO SHIFT
- Perfect Torque Converter.
- SAFETY — for Operator, load or equipment.
- Gas-Electric POWER Transmission.
- Cantilever boom.

With COLES—Irrespective of boom position with relation to chassis the operator can always steer left for left and right for right. It is unique—it eliminates the need for reversing at anytime—it enables the operator to proceed in a forward direction at all times—it becomes a time saving factor. Add to these features—the only crane in this size range to lift full rated load throughout full circle of swing and you have the perfect materials handling crane.

COLES CRANES, Inc.
Box 942-F Joliet, Ill.

COLES CRANES, Box 942-F, Joliet, Ill.
Please tell me HOW COLES REVERSIBLE STEERING will help solve our Material Handling Problem?

Firm _____

Address _____ City _____ State _____

Name _____

Send catalog () Salesman ()

COLES CRANES

The Name That Carries Weight
in Material Handling

Circle No. 39 on Reader Service Card for more information

Safe Truck Operation:

The do's and don'ts for safe operation of industrial trucks are detailed in literature available from The Elwell-Parker Electric Company. Operator training suggestions are included in the brochure. Circle 209 on Reader Service Card

Mechanized Tie Handling:

A new color sound film, "Easy Does It", illustrates in detail the latest method of handling and dis-

tributing railroad ties along right-of-way, according to Brainard Steel Division, Sharon Steel Corporation. The new method employs heavy-duty steel strap with a patented seal joint to band ties in tram side lots, which can be distributed singly or in multiple-units. Circle 210 on Reader Service Card

Light Conveyor Belts:

A catalog on its new line of light conveyor belts for food handling

or light industrial use has been published by The B. F. Goodrich Company, Industrial Products Division. The catalog features the Koroseal conveyor belts, in tan or white colors, where temperatures range from 50 to 150 degrees Fahrenheit.

Circle 211 on Reader Service Card

Mobile Radio:

Bulletin ECR-152A issued by General Electric Company features and describes the company's new 15-watt mobile unit and 15-watt base station unit, recently added to its line of low band (25-50 mc.) two-way radio communication equipment.

Circle 212 on Reader Service Card

Electrical Review:

A 38-page catalog published by Allis-Chalmers Manufacturing Company gives a progress report on what's new in the electrical field.

Circle 213 on Reader Service Card

Variety of Lifters:

Economy Engineering Company shows in its bulletin 54 a variety of lifters, elevating tables and trucks, designed to handle almost any job. Many in-use photos are included in the colorful literature.

Circle 214 on Reader Service Card

Storage Battery News:

The latest issue of "Storage Battery Power" a publication of Thomas A. Edison, Inc. gives case histories of electric trucks powered by Edison batteries. Unusual applications are pictorially described.

Circle 215 on Reader Service Card

Floor Maintenance:

A 4-page, 3-color folder, 3609-X, issued by Flexrock Company, tells how "Bakeflex" preserves floor surfaces and arrests dusting of concrete before it progresses to the repair stage.

Circle 216 on Reader Service Card

KOHLER ENGINES

4-CYCLE
AIR-COOLED



K90 3.6 H.P.
K160 6.6 H.P.
K330 11.8 H.P.
K660 26.8 H.P.

Kohler Engines are engineered and manufactured to the high standards which have made the Kohler mark known for quality the world over.

Power for garden tractors, pumps, sprayers, snow removal equipment, grain elevators, hoists, portable saws, concrete mixers, compressors, industrial lift trucks.

Write for information



K160

K330

K660

Kohler Co., Kohler, Wisconsin
Established 1873

KOHLER OF KOHLER

PLUMBING FIXTURES • HEATING EQUIPMENT • ELECTRIC PLANTS
AIR-COOLED ENGINES • PRECISION CONTROLS

Circle No. 81 on Reader Service Card for more information

Reduces Labor Costs:

The Kal-Truck manufactured by Kalamazoo Manufacturing Company is described in bulletin KT-3 as being built like a tractor to reduce labor costs in material handling. The truck is said to handle bulk materials of almost every description at big savings.

Circle 217 on Reader Service Card

Seals in a Jiffy:

The Packomatic Packer-Gluer packaging machine manufactured by J. L. Ferguson Company is said to be economical, smooth and fast sealing. Details are contained in bulletin 100-53A.

Circle 218 on Reader Service Card

Plant Layout

Modern methods for plant layout are described in a 32-page catalog issued by F. Ward Harman Associates. An analysis of plant layout techniques, and two and three dimensional equipment is listed and described.

Circle 219 on Reader Service Card

Fast, Easy Servicing:

Among the claims made by the Hyster Company for its model RC-150, 15,000 pound capacity fork truck, is fast and easy servicing. A 16-page brochure gives outstanding features and specifications.

Circle 220 on Reader Service Card

Controlled Drive:

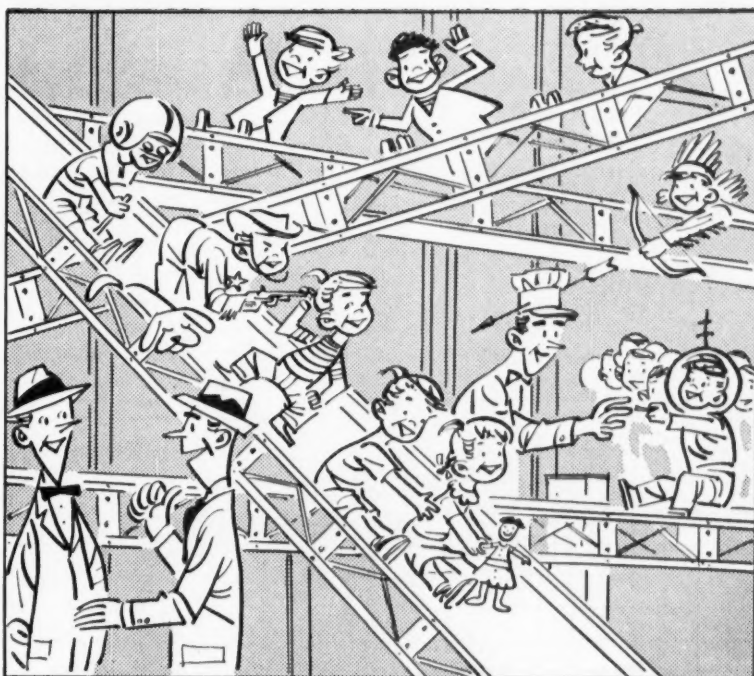
Thyratron motor control drive, what it consists of and how it operates, is described in bulletins GEA-5829 and GEA-5827 available from the general Electric Company.

Circle 221 on Reader Service Card

Conveyor Catalog:

Gravity wheel conveyor catalog has been published by Samuel Olson Manufacturing Company. Ease of use and labor saving features are pointed out by the manufacturer.

Circle 222 on Reader Service Card



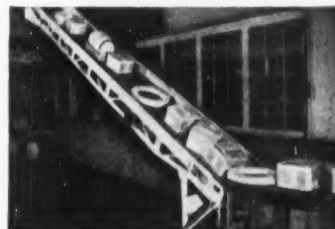
We ship so fast with our Farquhar Conveyors that production can't keep up! So we sell rides to the kids!

Farquhar Conveyors Keep Production On the Go!

Farquhar Conveyors save time, labor, money . . . and we can *prove* it! Not just with paper and pencil, but with actual results in operations like yours all over the country! Testimonials in our files (some of which are described in the free booklet offered below) from every type of business imaginable, prove Farquhar conveyors work better, give longer, more trouble-free service and pay for themselves in operation, many times over! What's more, Farquhar can do the same for you!

Whether you move bulk or packaged materials—horizontally or from floor to floor—Farquhar can cut *your* handling costs to rock bottom. Probably your problem can be solved by one or more of Farquhar's "standard" portable, semi-permanent or permanent

power-belt and gravity conveyors. On the other hand, where a specialized system is called for, our engineers will be glad to work with you . . . at no obligation, of course. Find out how Farquhar can help you—a note on your letterhead will bring one of our men on the run.



Typical packaged materials handling installation. Farquhar conveyors stack, pile, store or move materials faster and easier—cut all your handling costs to the bone.

OLIVER

Farquhar
CONVEYORS

FREE! "Owners Report"—a booklet of case histories of money-saving conveyor installations.

MAIL COUPON FOR YOUR COPY

THE OLIVER CORPORATION
A. B. FARQUHAR DIVISION
Conveyor Dept. G-06, York, Pa.

Gentlemen:
Please send me my free copy of "Owners Report."

Name.....

Firm.....

Address.....

City..... Zone..... State.....

**POWER-BELT
AND
GRAVITY
CONVEYORS**

Circle No. 57 on Reader Service Card for more information

NOMOGRAM . . .

(Continued from page 114)

compressed (in pounds per square inch)

e = strain to which the cushioning material is compressed—in/in

Given: W , h , A , G , and f = function of (e)

To find: t

By the techniques of Dimensional Analysis, it is found that

$t \cdot G \cdot e_0 = \text{a function of } G \cdot W$
 $h \quad A \cdot f_0$

where e_0 and f_0 are measures of the magnitudes of the strains and the stresses in the particular cushioning material under consideration. The function that is indicated the above equation is determined by the shape of the cushioning material's stress-strain curve when it is plotted in dimensionless form, that is, when it is plotted as f/f_0 versus e/e_0 . (The derivation of this equation is worked out in de-

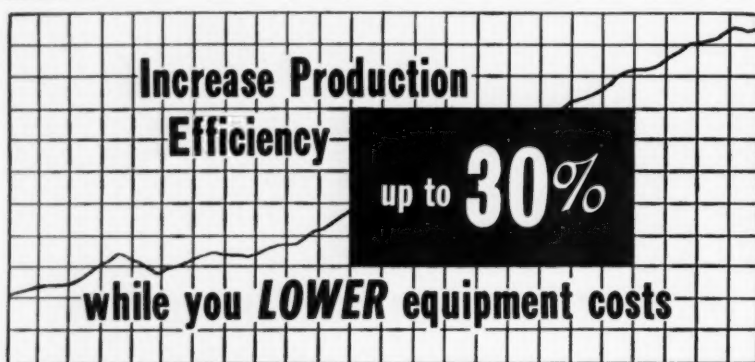
tail in "The Development of a Cushioning Nomogram" Contract NOrd 13882.) If it is possible to have a single formulation of the equation that will hold for many materials, then the shapes of the materials' stress-strain curves in dimensionless form will have to be alike.

Stress-Strain Relationships of Package Cushioning Materials

There are many materials used for package cushioning. The stress-strain relationships of at least some of these materials are available in the literature. But the method of testing, the shape of the test specimens, and the way in which the strains are computed, vary from source to source. In the beginning of this study, we worked from stress-strain data on several materials from various sources. A study of this data indicated that the original concept of a single cushioning relationship was possible.

But to be certain, the validity of the stress-strain data had to be established. The only feasible way to make tests. There was neither the time nor the means to obtain the stress-strain relationships of all the materials by testing. Instead, cushioning materials were analyzed for the factors that determine their cushioning properties. Then they were classified according to these factors and representative materials were chosen for testing.

It is evident that the stress-strain relationship depends on that of the basic material in the cushion and on the structure by which the basic material is arranged. Regarding their stress-strain properties, the basic materials may be roughly divided into two types according to their maximum allowable percentage of elongation under stress. Most of the basic materials have relatively low maximum percentage elongations as, for example, cellulose, animal hair, and glass. On the other hand, the rubbers and some



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of the synthetic plastics have relatively large maximum percentage elongations.

The materials with small elongations usually occur in the form of fibers which are bent and matted into a cushioning material; the reason being that this structure permits the large deformations required for cushioning without rupturing the materials. On the other hand, rubber and the other elastomers are more often used in cellular structures which utilize their greater capacity for deformation.

There are additional structural factors: In the case of fibrous structures, the fibers may or may not be bonded to each other and the bonding material may be relatively rigid or it may be deformable. Also the fibers may be smooth or they may tend to interlock as in felt. In the case of cellular structures, the cells may be interconnecting or they may be closed.

There are a number of types of cushioning material. It is reasonable to believe that cushioning materials of the same type have approximately the same kind of stress-strain relationship. On this basis it was decided to test materials representative of each general type. However, granular materials, solids and cushioning devices were not included in the selection. The types of cushioning material from which the selection was made are presented in Table I.

Table I
CLASSIFICATION OF CUSHIONING
MATERIALS BY STRUCTURE AND
BASIC MATERIAL
MATTED FIBER STRUCTURES

Without Bonding
Semi-Rigid Bonding
Elastomeric Bonding

Cellulosic
Excelsior
Paper
Paper Pulp
Papier Mache
Wood Felt
Tula
Bagasse
Cotton
Jute
Flax
Straw

Animal Origin
Curled Hair
Felt
Wool
Inorganic
Glass
Metal

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Item B-768
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Item B-426
\$6720
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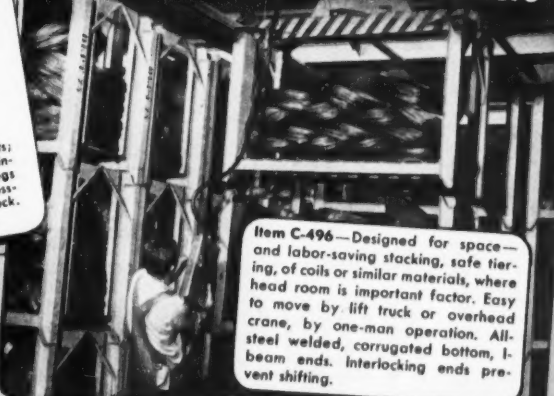
Designed to handle a large variety of items or parts. Three steel shelves with 1" flanges all around. Floor clearance 9 1/2". Overall height to top shelf 42 1/2". Top of table 50". 44" long, 20" wide. All steel welded construction. Semi-crated approx. 190 lbs.



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\$515
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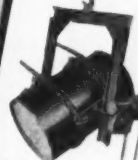
Catch turnings from screw machines, ideal for holding scrap, etc. Water tight. Top 25 3/4" x 45", bottom 25 3/4" x 27". Depth is 17 1/2". Height 23". Furnished higher or lower on special order. Carries about 1 1/2 cubic yard. Two 8" semi-steel wheels and two 4" metal swivel casters. Weighs app. 125 lbs.

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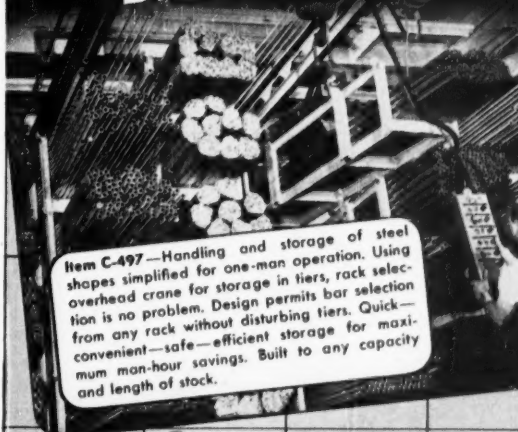
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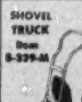
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NOMOGRAM

Continued

Asbestos
CELLULAR STRUCTURES
Moderately Resilient
Basic Materials
Cork
Wood
Highly Resilient
Basic Materials
(Interconnecting Cells
Closed Cells)
Natural and Synthetic Elastomers
As Blown
Shredded and Re-bonded

CORRUGATED, CREPED AND
RIGID STRUCTURES
Corrugated Fiber Board
Single Faced
Double Faced
Double Wall
Creped Cellulose Wedding
Molded Corrugated Pulp
GRANULAR MATERIALS
Shredded Elastomers
Ground Cork
Popcorn
Sawdust
Vermiculite
SOLIDS
Elastomers
DEVICES
Moderately Resilient Structural
Members of the Container
Moderately Resilient
Blocking Structures
Shock Isolators

The following five materials were selected:

Rubberized Tula Fiber
Rubberized Hair
Glass Fiber
Natural Latex Rubber Foam
Shredded and Re-bonded Latex Foam

This list is not as complete as would be desired, but it was beyond the scope of this study to include more.

The materials were tested under static loading conditions. The resulting stress-strain curves are shown by Curves 1 through 5 which accompany this article.

The question is: Do Curves 1 through 5 have the same shape when plotted in dimensionless form? In order to plot these curves in dimensionless form it is necessary to find some kind of distinguishable point which occurs on each of these curves. It was reasoned that the most useful point is the "thickness optimum" point described by Mr. Janssen². This is the point of stress and strain which the material should be designed to attain in a drop test if it is desired to minimize the thickness of material. To find this point, the ratio of the compression energy per unit volume to the stress is computed from the stress-strain curve and plotted as a function of strain. This curve has a peak at some value of strain. (See Curves 1 through 5). This strain and the corresponding stress are the optimum design values for minimizing the thickness of material. For this reason, they are an advantageous choice for e_0 and f_0 .

Using this e_0 and f_0 , the stress-strain Curves 1 through 5 have been plotted in dimensionless form. Considering any one particular curve, this means that each stress on the curve has been divided by the value of f_0 which pertains to that curve and each strain has been divided by the value of e_0 for that curve. The ratios thus obtained have been plotted as f/f_0 versus e/e_0 .

Curve 6 shows the results for four materials on their first loading cycle. They all have approximately the same dimensionless stress-strain curve. Curve 7 shows the dimensionless stress-strain

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curve for five materials on their tenth loading. Here again, we have practically a single curve. Curve 8 is an average of these two curves and the dotted lines show the maximum deviations of these materials. It is of much interest to note that when this mean curve is used for cushioning calculations the resulting maximum error in cushion thickness is at most not more than 4% when designing for minimum thickness.

So it appears, at least for these materials, that a single formulation of the equation developed earlier in this article, based on Curve 8, can be used with little error.

The cushioning relationship shown by Curve 9 has been derived from Curve 8. Curve 9 shows the relationship of cushion thickness to the other factors involved in cushioning. It shows that from the standpoint of minimizing cushion thickness, there is an optimum range of G W.

A L_c.

Need for Non-mathematical Method

Whereas Curve 9 gives a clear picture of the relationship of cushion thickness to the other factors, there has been a demand for a completely non-mathematical method of finding cushion thickness. Consequently, the cushioning relationship has been put into the form of an alignment chart, or nomogram, which may be used to solve the following cushioning problems:

1. To estimate the minimum possible thickness of cushioning material.
2. To determine the required thickness of a given cushioning material.
3. To select a material which will provide a cushion of least thickness.
4. To provide the bearing area that results in a cushion of least thickness of a given material.

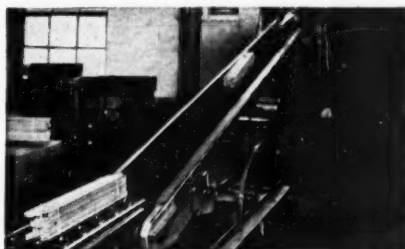
Example of the Use of the Chart
The use of the alignment chart is illustrated by the following example:

Suppose an instrument weighing 5 lbs., which is capable of withstanding a 30g deceleration and which bears



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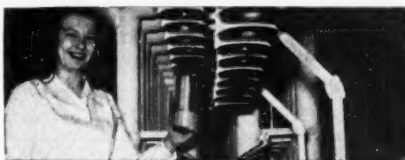
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NOMOGRAM

Continued

on a cushion area 6" x 6", is dropped from a height of 36". We first enter Part I of the nomogram from the left hand side with the weight and the bearing area. A line is drawn from the 5 lb. mark on the weight scale to the 36 square inches mark on the area scale. This line is extended to intersect the ref-

erence scale adjacent on the right. A second straight line is drawn from this intersection through the 30g mark on the G scale and continued to intersect the next reference scale on the right. To determine the Stiffness Factor or f_0 , which will result in the least thickness of cushioning, draw a line connecting this intersection with the point 2.53 on the scale to the right of the Stiffness Factor scale (this is

indicated in Fig. 2 by the line of short dashes). The intersection of this line with the Stiffness Factor scale shows that a stiffness factor of 4.0 yields the minimum thickness. Of the material shown in Figures 1 through 5, the one whose stiffness most closely corresponds is that of Curve 3. Entering the Stiffness Factor scale with the Stiffness Factor for this material, which is 3.0, we obtain a number from the Selection Scale somewhat greater than 2.53. This we transfer to the scale at the far right of Part II.

Now, starting on the left hand side with Part II, we enter with the G-Factor of 30 and with the 36 inch drop and draw a line which intersects the reference scale to the right of the Height scale. A line is drawn from this intersection through the point on the Deflection Factor or e_0 scale that applies to this material, namely Deflection Factor = 0.51, and is extended to intersect the next reference scale. Finally a line is drawn from this intersection through the Thickness scale to the scale beyond at the point on it which was obtained from Part I of the chart. The point where this line crosses the Thickness scale shows that 6" of this material is required to protect the instrument.

To make the cushioning nomogram useful for a large number of materials, it will be necessary for the stress-strain relationships to be determined in a uniform and rational manner. The values of stiffness factor and deflection factor (i.e., f_0 and e_0) can then be found and compiled in a table. This tabulation should include the density of the materials and the maximum stress to which they can be loaded for a number of cycles.

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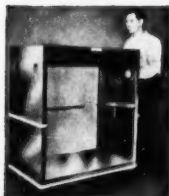
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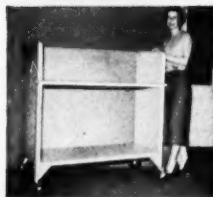
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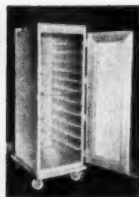
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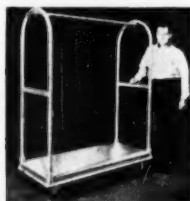
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(2) The shipping costs due to the volume added by the cushioning.

(3) The shipping costs due to the weight added by the cushioning.

(4) The fabrication costs of the package due to the cushioning.

(5) The change in container costs due to the cushioning.

The fourth and fifth aspects of cost are beyond the scope of this study.

(1) The first aspect, the cost of the cushioning material itself, is minimized by choosing the material which absorbs the most energy per unit cost. To find the thickness of this material that is required, we consider that the maximum energy will be absorbed at a certain maximum stress which can be expressed as f_m/f_0 which

$$G \cdot W$$

equals $\frac{G \cdot W}{A \cdot f_0}$. From Curve 9 or

$$A \cdot f_0$$

the alignment chart the corresponding value of cushion thickness can be found.

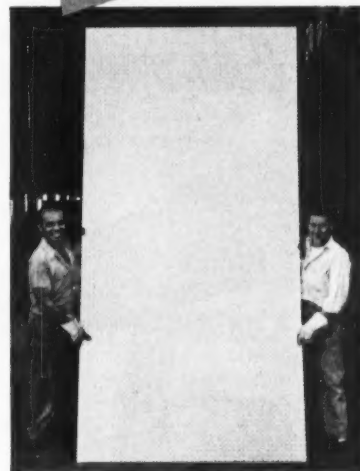
It is interesting to note that the amount, that is, the volume of a given cushioning material that is required to absorb the drop energy of a fragile article is practically independent of the G factor of the article. So that even if the G factor is not known, the required volume of cushioning can be obtained if the material's energy absorption capacity per unit volume is known. Of course, to closely control the magnitude of the shock, the bearing area and the thickness must be determined. But in cases where the allowable G factor is not known, but it is probably fairly high, it is useful to be able to at least estimate the minimum amount of a given material that will prevent very large shocks.

(2) The shipping costs of the volume added by the cushioning are minimized by using the material that will accomplish the cushioning with a minimum of thickness. As discussed in the derivation of the cushioning equation, a material's maximum load under impact should produce the stress f_0 in order to minimize the thickness required. In order to attain this stress, the area of the cushion will generally have to be different than the area of the article. To compare different materials all of

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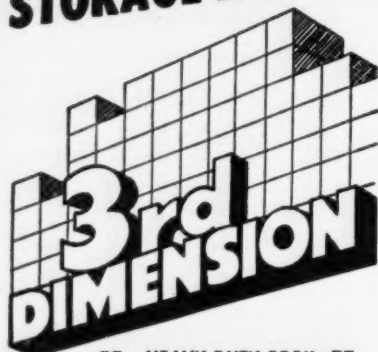


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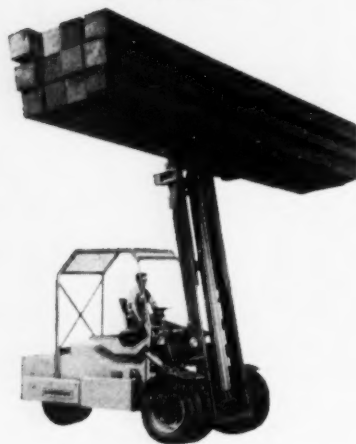
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NOMOGRAM

Continued

which are loaded to f_0 , it is noted on Curve 9 that there is a minimum value of $\frac{t \cdot G \cdot e_0}{h}$. So for

given G and h , the material which has the largest e_0 will result in the least thickness t .

(3) The shipping costs due to the weight added by the cushioning are minimized by using the material which absorbs the most energy per unit of weight. As is the case in minimizing the cost of the material itself, the bearing area has to be adjusted so that the material will be loaded to its maximum allowable stress.

Combining these three aspects we have the total cost of cushioning, as influenced by these factors, as follows:

Definitions:

C_{mv} = Cost of material per unit volume

C_{sv} = Cost of shipping per unit volume

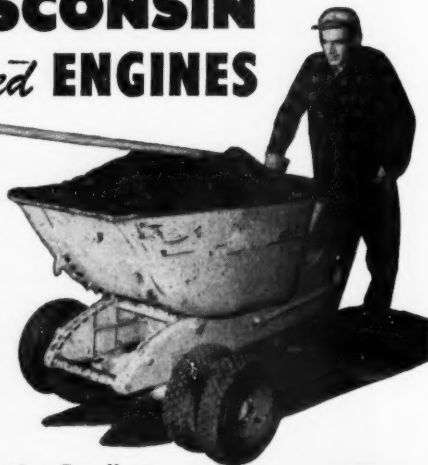
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C_{sw} = Cost of shipping per unit weight

V_c = Volume of cushioning

ΔV_p = Increased volume of package due to the cushioning

∂ = Weight of cushioning per unit volume

Then,

Total cost = $C_{mv} \cdot V_c + C_{sv} \cdot \Delta V_p + C_{aw} \cdot V_c \cdot \partial$ or

Total cost = $V_c (C_{mv} + \partial \cdot C_{sw}) + C_{sv} \cdot \Delta V_p$

If the cushioning entirely fills the space between the article and the outer container, then

$\Delta V_p = V_c$, and

Total cost $V_c (C_{mv} + C_{sv} + \partial \cdot C_{sw})$

Each of the above aspects of cost can be evaluated by means of Curve (9) or by the Cushioning Nomogram.

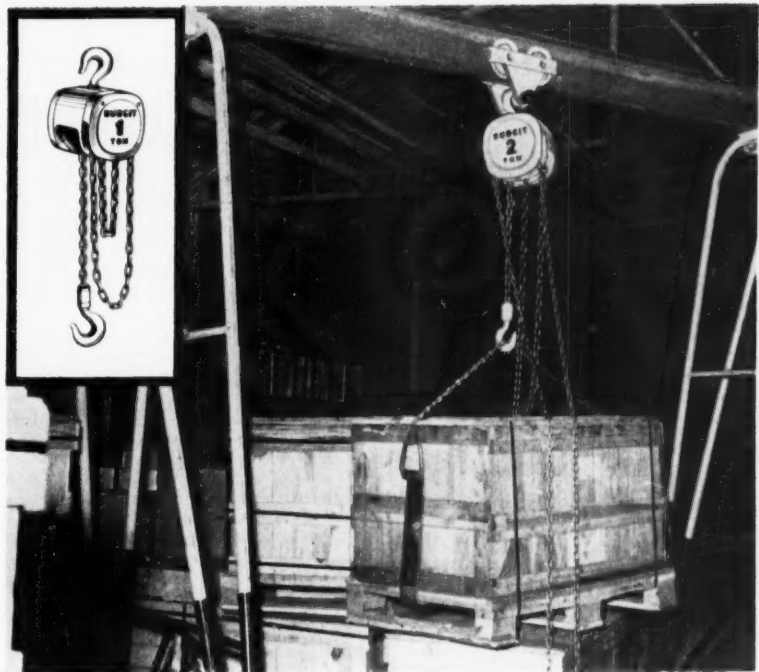
Conclusions

(1) The amount of cushioning material required to enable a fragile article to withstand a specified drop test can be found from a single relationship which applies to many cushioning materials. This relationship, shown graphically by Curve 9, relates cushion thickness to the weight of the article, its bearing area on the cushioning, its fragility, the height of drop and a stress and a strain characteristic of the cushioning material. The characteristic stress and strain for each cushioning material are obtained by a prescribed process.

(2) The cushioning relationship can be presented as an alignment chart in order to avoid all mathematics in finding the required amount of cushioning. One possible arrangement of the chart is shown in Figure 2.

(3) The cushioning relationship shows the minimum possible thickness of cushioning and the stiffness of material that must be used to attain this minimum of thickness. If the bearing area on the cushioning is variable, the cushioning relationship shows the area which must be used to enable a given material to cushion with a minimum of thickness.

(4) The most economical cushioning material for a given application can be chosen from the standpoint of direct material cost, cubage, and weight. The necessary



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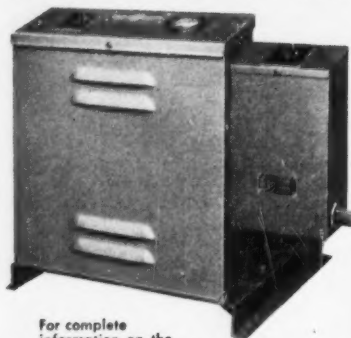
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NOMOGRAM

Continued

calculations of cushion thickness and the selection of cushion stiffness may be made using Curve 9 or the Cushioning Nomogram.

Acknowledgment

The author's thanks to Messrs. H. F. McClellan, R. E. Seely and R. H. Long at the Naval Ordnance Laboratory, White Oaks, Maryland, and Messrs. T. P. Wharton, A. C. Beardsell and G. S. Mustin of Container Laboratories, Inc. for their encouragement and assistance in this work.

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CALLAO . . .

(Continued from page 38)

routine preventive maintenance check was established for all equipment every 50 hours—and at the end of 400 hours of operation, Colonel Quinn and his staff make a systematic "military" check of equipment. This has heightened the regard of the operators for their machines, and resulted in excellent care and very little "down-time".

One of the first jobs necessary was the clearing of littered cargo

in open custom yards. Clearing of the area reduced pilferage claims and eliminated damage resulting from exposure. The space is now used as a parking area.

New Port Takes Shape

In the warehouses, pallets and pallet racks have permitted utilization of all available overhead space. Palletized general cargo in small lots is easily and efficiently stored, three and four high on pallet racks. Security areas have been established to hold the more valuable items.

The loading of cargo on pallets at dockside and effective use of the equipment purchased has cut handling time in half. Orderly warehouse storage and modern equipment has made it possible to locate and re-handle individual shipments in a matter of minutes. Petroleum drums, which once were stored singly in an oily lake, are now pyramided in an isolated area, thus minimizing the possibility of fire hazards. In addition, damage formerly inflicted on general cargo has been considerably reduced.

Tractor-trailer trains have greatly speeded handling at the port. This system takes the place of freight cars, moving palletized cargo from ships to warehouses, without reducing the efficiency of the ship unloading operation. Loaded trailers are hauled into the warehouse, spotted adjacent to the allotted storage space, unloaded and stacked by fork trucks. Tractors are then uncoupled, pick up a load of empty trailers, and return to the dock.

Yard storage has been organized and simplified. Where possible, large items which may be stored in the open are picked up at the dock by cranes, fork trucks and side loaders. Areas have been marked off in the paved yard, and material is easily spotted or picked up without delay or confusion. Since it is now possible to maintain accurate records and control of material—both incoming and outgoing—pilferage has been practically eliminated.

Commerce Benefits Also

The latest available figures show that 6750 vessels entered

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CALLAO

Continued

Peruvian ports in a year's time, with nearly 10½ million tons, of which over 8 million tons were carried by foreign vessels and approximately 2 million tons by vessels of the Peruvian flag. It is felt by shippers and port officials alike that the modern methods employed at the port cannot fail to have an important beneficial effect on the commerce of Peru.

The present situation may best be summed up by the fact that the 25% port congestion surcharge by the European, South Pacific and Magellan Conference, in effect since April 1, 1951, was removed by the Conference effective June 15, 1953. Through good management, not the least phase of which has been intelligent use of modern cargo handling equipment, port facilities are today a model of good housekeeping and streamlined operation.

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FLOW • AUGUST, 1954

FLOW SYSTEMS . . .

(Continued from page 32)

to customers almost entirely by tank truck and rail tank car. These are loaded at rates of around 200 gallons per minute. The company believes this to be one of the most modern and efficient ways to handle industrial sugar.

Unitized Accessory Supply Service

A small proportion of liquid sugar is delivered in 55 gallon drums, which, along with miscellaneous process materials, are handled by fork trucks. Process ingredients, palletized upon receipt, are handled through stores and delivered to operating stations in unit loads.

Sugar refining in the Suncrest Division is the largest of the three operations at Brooklyn. In it, material handling is principally confined to the input and output ends of the process because sugar refining is essentially a steady-stream liquid process. Some 3000-4000 tons of raw sugar are processed weekly. Handling of the dry, raw and refined sugars is somewhat unique because of daily tonnage moved and value of products handled—up to \$175 per ton.

Raw sugar is received by ship from overseas points such as Cuba and Puerto Rico. While there is a movement in the industry to transport raws in bulk, for various reasons most raw sugar is still shipped in burlap sacks containing 140 to 300 pounds each. These are removed from ships in drafts of about one ton by means of cargo slings and deck winches. Each draft is placed on a small, platform truck and towed by tractor to a platform scale.

After weighing and sampling, the drafts are dumped, by means of a drum-hoist, onto an inclined, steel, pan conveyor which elevates bags to a "cut-in" station. Here bags are opened and raw sugar dumped. Emptied bags are dropped to tote boxes, holding from 600 to 1,000, and removed to a cleaning operation in another building. The raw sugar now moves on belt conveyors to bulk

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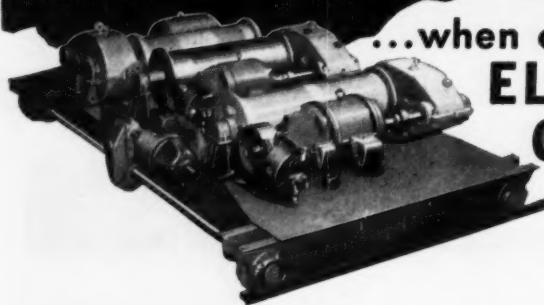


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FLOW SYSTEMS

Continued

storage. Using four "cut-in" stations, the equipment at Sucrest can efficiently discharge cargo at rates up to 2500 tons per day.

It is necessary for a sugar refinery to have raw sugar storage capacity for 20 or more days of operation. Storage for about 15,000 tons is provided at Sucrest. When cargo is being received a portion of raws is diverted directly to process to avoid rehandling.

Raw sugar is transported from storage to process by belt conveyors. It is automatically weighed in transit—for process and inventory control—by means of a one-ton rotary bucket scale. Warehouse trimming and cleanup is done with a portable bucket conveyor and shovel trucks. Sugar moves to process in a 24-hour stream at the rate of 20 to 30 tons per hour.

On the output end of the process, refined sugar leaving the vibratory, classifying screens drops by gravity to screw conveyors, which move to storage bins and silos. Here sugar is held for packing and delivery operations.

Storage in Silos

Bulk storage is provided in four silos for one million pounds of refined sugar. These silos are of monolithic concrete construction with integral head-house. Linings fabricated of wood and hardboard are constructed with an insulating air space between them and concrete walls. Conditioned air is blown into silos while filling and emptying to keep sugar free-flowing.

Sugar is fed to silos by a 16 inch diameter screw conveyor train of 30 tons per hour capacity. Sugar drawn from silos flows by gravity to a 20 inch diameter x 85 foot long conveyor of 75 tons per hour capacity. This feeds a 100 ton per hour bucket elevator, which returns sugar through a chute system to packing house bins. The recovery screw and elevator are of extra capacity to permit feeding bulk delivery trucks and also circulate sugar in silos without interfering with packing schedules.

With this arrangement, it is possible to produce refined sugar for 24 hours and pack or deliver all production in a normal 8 hour day. A high proportion of product can move to carriers without going through storage. It also allows packing operations to proceed at peak rates, with resulting efficiency and high productivity at all times.

Whenever possible packages are diverted from belt conveyors onto gravity-wheel conveyors going to carriers. Packages not so delivered move to the belt conveyor end, where they are manually separated by type and palletized for storage. Conventional 36 x 48 inch wooden pallets are used. These have been found adaptable to and are standard for all plant operations except drum handling, in which 50 x 50 inch pallets are used.

Refined sugar stored in warehouses is stacked four pallet-loads high, (32 to 34 bags) to make maximum use of vertical space. Some sugar is occasionally stored in remote warehouses a considerable distance away from main operations. This is moved in pallet

loads on tractor-drawn platform trucks, of four to six per train, and restacked by fork truck.

From storage, some packaged sugar is loaded aboard carriers in unitized pallet loads. In many cases, customers furnish their pallets or skids for refinery palletizing. Otherwise, packages are removed from pallets and stacked in carrier.

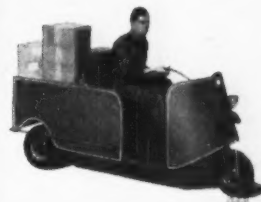
Bulk Sugar Trucks

Bulk sugar trucks are loaded directly from refinery silo conveyors. The two forms of bulk trucks are: (1) a tilting tank type with stainless steel tank carrying 14 tons; and (2) flat-bed trailers carrying up to 12 aluminum alloy bins, each holding about 3500 pounds. The tank type can be filled by one man in 15-20 minutes, the bins in about 30 minutes.

All trucks leaving the plant are weighed empty and loaded, regardless of commodity carried, on a 50-ton platform scale weighing to the nearest 10 pounds. This not only serves to determine exact



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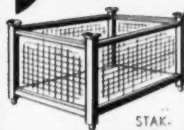


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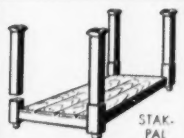
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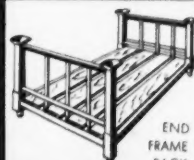
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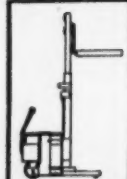
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Illustrated above is the high lift model Go-Getter—a favorite of the food producers—accepted throughout all industry. In 2000-3000 lb. capacities—remarkably adept in narrow aisle work, the Revolverator Go-Getter high lift truck permits great economies in warehousing.

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FLOW SYSTEMS

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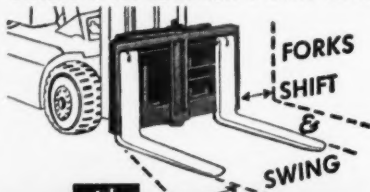
weights of dry and liquid bulk loads but also furnishes a final check on package quantities delivered.

Convey Empty Bags

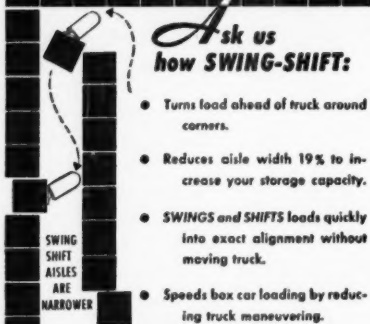
Empty raw sugar bags are dumped from bin boxes and manually hooked in verted position on an overhead chain conveyor. Speed of this conveyor is regulated by the foreman who sets the operating pace. The bulk of recovered raw sugar falls out here and is removed by shovel truck. The conveyor elevates bags to the next floor where they are further cleaned by suction cleaners driven by two 30 horsepower fans. Sugar is recovered in dust collectors. Cleaned bags then drop to a classifying and baling station. Bags not cleaned sufficiently by dry cleaning are laundered, dried, reclassified and baled for resale.

Liquid products of the process—including liquors going into liq-

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FLOW • AUGUST, 1954

uid sugar processes and molasses extracted from raw sugar—are all weighed out in 20 and 25 ton tank scales for exact control.

The system at American Molasses, according to John G. Schuettinger, who contributed this section, is constantly in evolution to meet new situations and changing conditions. Its effectiveness has resulted from the continuous, cooperative efforts of engineering, manufacturing and warehousing staffs.

Minimum Damage in Inter-floor Flow

Gentle handling of a delicate product as it moves between plant levels is a requirement not by any means confined to the food industry. There is, however, a solution to the typical problem which has been worked out by a macaroni manufacturer.

His need was a continuous flow system, between two floors of two buildings, that would be fully sanitary and, at the same time, eliminate the checking and cracking

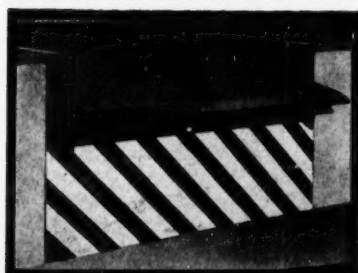
which tended to destroy the appearance of the finished product.

Accompanying illustrations show how this was accomplished. Macaroni products are cut on the third floor and fed, by belt conveyor, to a bucket elevator unit. This travels vertically then horizontally through a structural wall to empty onto another belt conveyor on the fourth floor of the adjoining building.

The result of the installation has been: (1) the virtual elimination of product damage which formerly resulted from repeated handlings of in-plant containers; (2) lightening of the building elevator traffic; and (3) the saving of space and equipment no longer required for the process.

For information and pictures included in this systems survey, FLOW thanks the following:

Brooks & Perkins, Inc.; Conveyor Specialty Company, Inc.; Counsel Machine Co., Inc.; Lamson Corporation; Rapids-Standard Co., Inc.; and, especially, John G. Schuettinger who provided the details on material handling in his firm—American Molasses Co.



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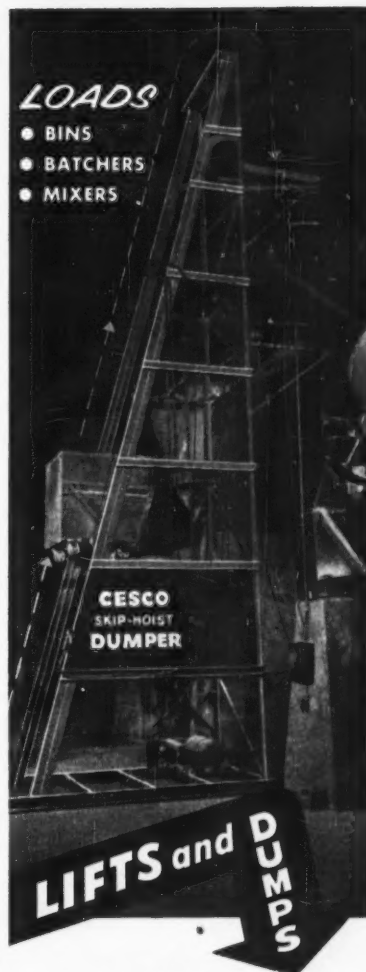
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165 Franklin Avenue, Nutley 10, N. J.

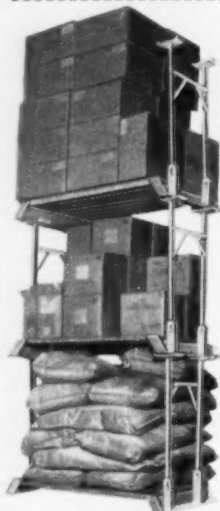
COLSON EQUIPMENT & SUPPLY CO.
1317 Willow Street, Los Angeles 13, California

CESCO SKIP-HOIST **DUMPERS**

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SAFELY TIER...

Fragile, Soft, Irregular Shaped, Mixed Merchandise
with any FORK LIFT TRUCK and



ALL **E-I-W** STEEL

MULTI-STAK Pallet Stacker Unit

No weight ever rests on the merchandise! All-steel pallets with self-supporting standards in a variety of sizes. Unit capacity: 4,000 lbs. Stacked static capacity: 20,000 lbs.



Supporting Standards lock in secure upright position

Carried and Tied by Fork Truck



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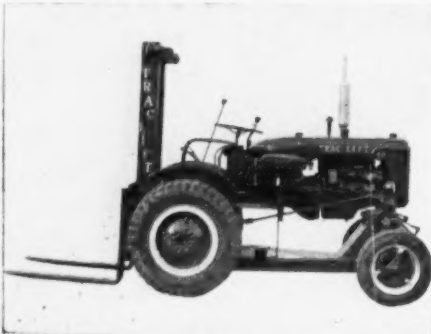
Materials Handling Specialists, Steel Fabricators SINCE 1907

536 GREEN LANE, ELIZABETH, N. J.

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THE GENERAL ALL-PURPOSE FORK LIFT TRUCK

for
Heavy
Duty
Work
at
LOW
COST



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- Two models—one 2000 lb. capacity, other 4000 lb. capacity.
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Details &
Literature

PIPER & PAINE
NUNDA N.Y.

Circle No. 109 on Reader Service Card for more information
150

NEW EQUIPMENT . . .

(Continued from page 44)

Electric Barrel Dumper

A barrel dumper with a lifting capacity of 1800 pounds is being marketed by The Moto-Truc Company. Maximum lifting height of the new truck is four feet. Any size or type barrel can be accommodated. A chain clamp on the side of the unit is adjustable to the specific height of the barrel. Travel speed is 2-1/2 to 3 m.p.h., with two speeds forward and reverse. Power is by a 12 volt battery. Of the walkie type design, the truck has roller grip controls and a push button hydraulic lift system. "Deadman" controls are standard, with an automotive type brake applied to the drive wheel.



Circle 228 on Reader Service Card for more information

Twelve-Pound Hand Truck

The Model H magnesium hand truck manufactured by Magnesium Company of America, weighs only 12 pounds, yet has a capacity of 500 pounds. It has been designed with curved cross-members and a curved back nose plate, especially for use with kegs, drums, barrels, bottles and other round objects. Features are: all-bolted construction, rubber pistol-grip handles, choice of tire and wheel sizes, and choice of either 5 or 7-1/2 inch nose plate depth. Stair climbers are optional.

Circle 229 on Reader Service Card for more information

New Materials Handling Box

Newest addition to the NesTier line is the Model 360 materials handling box. The unit is 36 inches long, 14 inches high and 16-1/2 inches wide. According to the manufacturer, Chas. Wm. Doepke Mfg. Co., Inc., the new unit was developed to meet industry's demand for a materials handling box midway between a tote box and a heavy corrugated bin-type container. The all-welded 14-gage steel boxes tier in

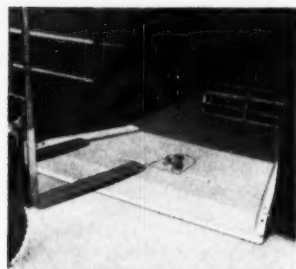


rigid stacks when filled, each unit resting securely on the upraised handles or bails of the box below. Contents remain fully visible and accessible. Model 360 can be used in conjunction with powered belt, overhead, wheel and roller conveyors.

Circle 230 on Reader Service Card for more information

Fast, Economical Ramps

Magnesium ramps manufactured by Bronco Products Company are said to provide fast and



economical unloading for either car or truck. The ramps feature maximum strength construction with a minimum weight factor. A safety tread surface has been provided for full traction. An adjustable locking device and specially designed

side guards prevent tire damage and overcome the danger of equipment run-off. Available in a complete range of sizes, capacities vary from 1,000 to 12,000 pounds.

Circle 231 on Reader Service Card for more information

Auxiliary Units Furnish Emergency Lighting

Two emergency auxiliary lighting units approved by Underwriters Laboratories, in a new



and fully redesigned line of 6-volt emergency lighting equipment. Both units, known as Exide Lightguard Models M and T, are said to conform fully to the recently revised National Electrical Code, and to include new features that in-

crease efficiency and service life. Each is furnished with one 25-watt sealed beam lamp, but is available with two if desired. Lamps are adjustable to provide light in any direction. Depending upon local conditions, each lamp will illuminate up to 10,000 square feet. One-lamp units will furnish more than 8 hours of emergency lighting; two-lamp units more than 3 hours. Both units are powered by the new Exide Type 3-COE-7 batteries. Normally, batteries are kept fully charged from the normal a-c supply through a built-in trickle charger since units are always plugged



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CONCRETE
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complete,
economical storage
and materials-
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Benefit from large capacity storage, today, and complete flexibility for the future with Marietta concrete storage systems. Every storage installation is soundly engineered to improve handling facilities . . . to incorporate essential equipment . . . to provide the most efficient means of discharge.

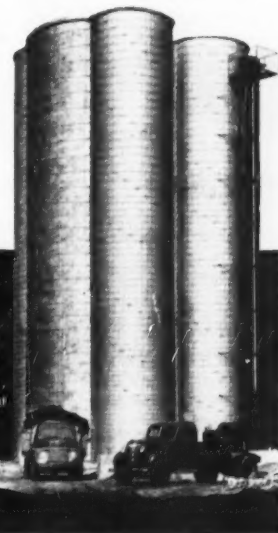
Every Marietta system is designed to meet your industrial needs . . . flexible and adaptable to conversion or expansion . . . efficiently constructed to reduce loss and waste and cut handling costs.

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Circle No. 91 on Reader Service Card for more information

Circle No. 148 on Reader Service Card for more information

HANDLING BULK MATERIALS?

"TAKE IT UP A FLO-TUBE"



To fill 3 or more hoppers use gate-valves in Flo-Tube horizontally. Below, filling 2 hoppers with "Y" chute.



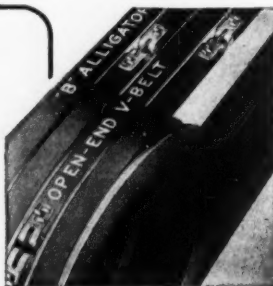
The spiral conveyor of steady, dependable service. Sturdy cast iron trough bolts together in 3 ft. sections, capped with steel plates for easy removal if ever necessary. Built to take the abuse of coal, yet with tolerances just right to handle materials from grain size to lump.

Hopper level maintained by 'off-on' automatic switches. Exposed end for pick-up

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SPECIALISTS IN AUTOMATIC COAL FIRING, HANDLING AND CONTROL EQUIPMENT
108 ANDREW PLACE S. W. • CANTON, OHIO

WHICH V-BELT is best for you?



ALLIGATOR V-BELT FASTENERS

★ In this way you can make up V-Belts in *any length* to fit *any drive* the fast economical way—V-Belts that perform exceptionally well.

If the correct size of endless V-Belt is not readily available, or if you have to tear down machinery to install, then the best belt to use is open-end V-Belting fastened with

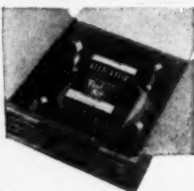
★ In contrast to link-type belts these ALLIGATOR fastened V-Belts have just *one strong joint*... *stretch and follow-up maintenance are reduced to a minimum.*

ALLIGATOR INTRODUCTORY V-BELT DRIVE UNITS

contain V-Belting, Fasteners and Tools—everything you need in one compact package to make up V-Belts quickly. Available in sizes A, B, C & D.

Ask for Bulletins V-215 and V-216
Order from Your Distributor

FLEXIBLE STEEL LACING COMPANY
4702 Lexington Street, Chicago 44, Illinois



Circle No. 59 on Reader Service Card for more information
152

into an electrical outlet. In an a-c power failure, a relay automatically closes to provide emergency lighting. When normal lighting is restored, the relay turns off the flood lights, and charging is automatically resumed. A unit may also be disconnected and moved to another location as a portable light. Model M (shown) charges at either of two rates—trickle or high rate—and incorporates a push button test switch for instantaneous checking. On Model T, a modified trickle charger is used, and testing is accomplished by disconnecting the plug momentarily, simulating a power failure which turns on the light.

Circle 232 on Reader Service Card for more information

Advantages Claimed for Safety Hook

Many advantages are claimed for a new safety hook that has been developed by Coffing Hoist Company. It is said to not only offer greater safety to both men and equipment during lifting operations, but to be simple and convenient enough so that hoist operators will

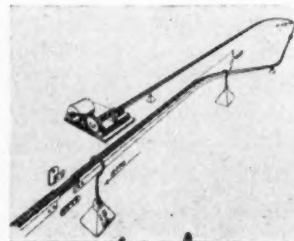


make full use of its safety locking feature. Once the hook is engaged, a stamped steel latch swings down and is securely held in place by a lock that is under spring tension. Slight pressure on the release unlocks the latch, and spring tension on the release holds the latch open. Made of drop-forged, heat-treated alloy steel, it is claimed to have higher tensile strength than any other hook of its size on the market. Cadmium plating prevents rusting or corrosion.

Circle 233 on Reader Service Card for more information

Conveyor for Light Loads

A simple and economical conveyor for handling light loads along paths which can incorporate both horizontal and vertical bends has been announced by M-H Standard Company. Termed the "Mono-flo" conveyor, it consists basically of a flexible high carbon steel screw approximately 3/4 inch in diameter which turns in a metal retaining rail. The top of the rail is open to permit exposure of the screw. When a load carrying hook is placed on the rail, the thread of the screw immediately en-



gages the hook and propels it along the rail. Loads can be placed on the conveyor and removed from it at any point along its path. The motor unit is completely mounted, ready for installation, and is available in a full range of fixed and variable speeds.

Circle 234 on Reader Service Card for more information

Four-Way Valve

Airmatic Valve, Inc. has announced a new hand-and-foot operated four-way valve with patented built-in, full-capacity, flow-control meters of the Venturi type. An air and low-pressure hydraulic valve, it is specifically designed for the control of double acting air or hydraulic cylinders. Valves are ruggedly built for heavy-duty service and long operating life, featuring one balanced spool



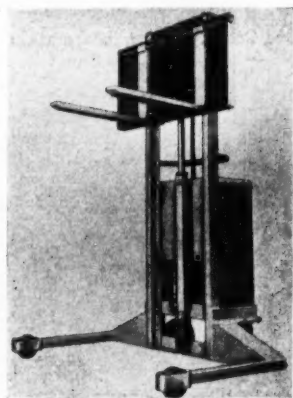
using renewable "O" ring type of packing. The flow control meters permit full-line volume without loss of pressure. Line-pressure variation will not affect valve function. Available in four standard pipe sizes, from 1/4 to 3/4 inch, for air, oil or water, pressure range is 0-150 pounds.

Circle 235 on Reader Service Card for more information

New Straddle-Type Unit Stacks Palletized Loads

A new fork type Worklifter, designed to stack palletized loads, has been announced by Economy Engineering Company. Known as the WL-F, the unit is battery-operated. It is raised and lowered hydraulically. "Up" and "down" push button controls are located at the end of a 12 foot cord held by a take-up cable, for operation from any spot most convenient to the operator. Raising and lowering is at 34 feet per minute. The platform may be stopped in any position safely by releasing the control button. Power is from two 6-volt 120-ampere batteries connected in series to give 12-volt service. Rated at 750 pounds capacity, the unit will take overloads up to 50 percent. Various widths and lengths are available.

Circle 236 on Reader Service Card for more information



TAKE *Another* LOOK

at this

Screw Conveyor Hanger Bearing



or any other style

- **Never Squeals**
- **Never Needs Oiling**
- **Never Drips**
- **Never Contaminates**
- **Resists Abrasion**
- **Available in ALL sizes for ALL screw conveyors regardless of style or make**
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- **Low Cost—Long Lasting**

IT'S AN *Arguto*

"NO MAINTENANCE—NO REPLACEMENT"
OILLESS BEARING

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Put Arguto to work in your screw conveyor.

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20
years



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a drink

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Circle No. 15 on Reader Service Card for more information

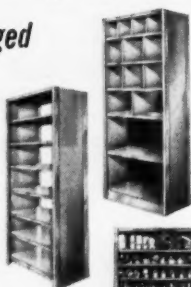
New Low Prices on Equipto Iron-Grip* Shelving

"Custom" Quality Unchanged

Expanded plant facilities and advanced machinery and equipment now enable Equipto to reduce prices up to 20% on IRON-GRIP Steel Shelving.

And you get the same outstanding features that IRON-GRIP has always offered—60% faster shelf assembly and adjustment . . . exclusive steel studs eliminate nuts, bolts and tools . . . heavy gauge angled steel uprights . . . channel sided shelves that hold 600 lb load without reinforcement . . . independent construction that prevents moving units intact without disturbing assembly.

See for yourself! Visit your Equipto distributor today!



A slope in the keyhole joins with the taper on the stud to form the tightest and strongest of grips. An exclusive Equipto design.



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Division of Aurora Equipment Co.
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Steel Shelving . . . Parts Bins . . . Drawer Units

for Better Belt Joints



To keep belts in service longer, use only GENUINE Clipper Belt Hooks applied with Clipper Belt Lacers.

use Clipper Belt Hooks



Clipper Hooks are made of the finest quality wire—BETTER than ever before—produced for our exclusive use. Hooks hold with firm, sure grip—give longer satisfactory service.

and Clipper Belt Lacers!

With the Clipper No. 9 Portable Lacer, you can lace up to 6 inches of belt in one quick, easy operation. For wider belts, merely repeat the operation.

Phone your Industrial Distributor for a demonstration!

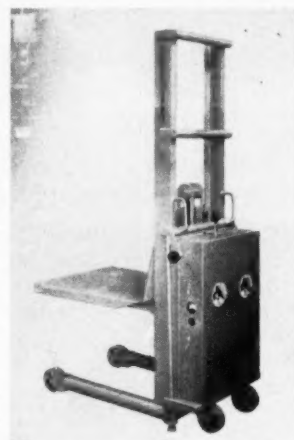
CLIPPER BELT LACER COMPANY, GRAND RAPIDS 2, MICHIGAN, U.S.A.



Circle No. 37 on Reader Service Card for more information
154

Lightweight Lifter

A lightweight, compact electro-hydraulic stacker of 1000 pounds capacity has been announced by Lewis-Shepard Products, Inc. Available in either the platform or straddle type, the lifting height of both models is 58 inches and the weight approximately 500 pounds. Speed is 25 feet per minute. Lifting and lowering is accomplished by a single control lever. The platform type has a carrying platform 30 inches long x 24 inches wide.



The straddle model has forks either 30 inches or 36 inches long, and can handle pallets up to 48 inches long. Electro-hydraulic power is furnished by a storage battery with a built-in charger which charges from any lighting circuit. Said to be ideal for applications where usage is frequent, a fast lifting speed is necessary, but more expensive equipment is not warranted.

Circle 237 on Reader Service Card for more information

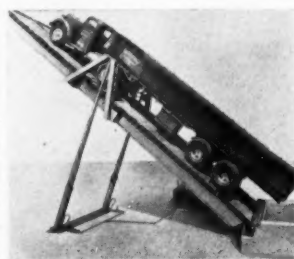
Belt Hook

It is now possible to lace belts a full 13/32 in. thick, says Clipper Belt Lacer Company. The manufacturer says this is accomplished by use of a new type No. 7 hook, which is said to provide smooth and flexible laced joints with no injury to belt fibers. This hook has a pulling strain of 675 lbs. per inch, or 5400 lbs. in an 8 inch belt.

Circle 238 on Reader Service Card for more information

Hydraulic Truck Dumper

A hydraulic truck dumper for trucks and semi-trailers up to 54 feet long has just been announced by Link-Belt Company. It lifts trucks with gross weight of 80,000 pounds to a 40 degree angle in 60 seconds and lowers them in 40 seconds. The dumper was designed to speed the unloading of trailer trucks of cottonseed, soybeans, grain, wood chips, potash, coke, sugar beets, corn and similar materials. It has 20 horsepower motors connected to hydraulic pumps.



Circle 239 on Reader Service Card for more information

Mechanically Operated Tong

A "Second Loader Automatic Tong" has been produced by the Automatic Tong Company. The loading operator is said to be able to set and release the tongs as fast as his machine will operate, with no additional lines. The unit operates in two cycles—simply tighten the line to lift the log and slack the line to release it. The tong will set itself in a log and release itself without the aid of a hook tender. Enthusiasm for the new device has indicated it is a long sought answer to a serious problem in log loading and handling, according to the manufacturer.

Circle 240 on Reader Service Card for more information

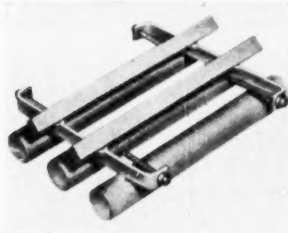
Front End Loader

A torque converter 1 cu. yd. front end loader has been added to the line of the Pettibone Mulliken Corp. The Speedall Front End Loader is available with either gasoline or diesel power. Engine is claimed to operate at maximum efficiency at all times, as power is automatically selected for the load handled. Engine stalling and slow-downs while waiting for engine speed pick-ups are thus eliminated, says the manufacturer. Bucket is centered over truck, 7 ft. above the ground. Front tires are 2 ft. away from truck body, to facilitate load spotting.

Circle 241 on Reader Service Card for more information

Flexible Magnetic Grate

A permanent magnetic grate of such flexible basic design that hoppers of virtually any shape can be easily and accurately fitted is announced by Eriez Manufacturing Co. The new unit, known as the Eriez Model P Magnetic Grate, consists of a series of stainless steel cylinders or tubes, covering powerful Alnico magnetic elements, spaced and held in position by thin welded stainless steel strips. Parallel with the cylinders and centered between



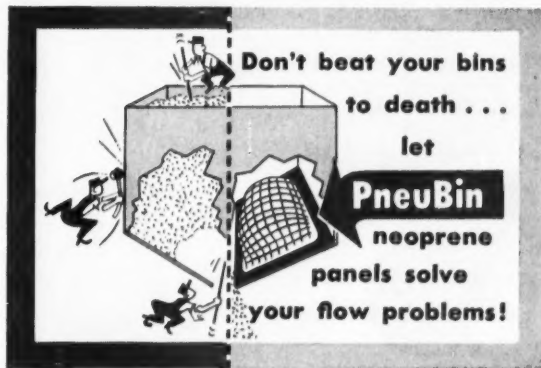
FLOW STOPPAGE COSTS MONEY!

Have you ever figured how much flow stoppage costs you in:

- LOST STORAGE CAPACITY?
- LOST MAN-HOURS?
- LOST PRODUCTION TIME?

PneuBin will solve your flow stoppage problems and help reduce your operating expense. When materials hang-up in your bins and hoppers, PneuBin starts them flowing again. The PneuBin unit consists of a steel-backed neoprene panel, mounted on the inside wall of your bin. By the pneumatic inflation and deflation of the panel, the bin contents are displaced and disturbed to activation. After the diaphragm has collapsed, the air control unit (operating off the regular plant air supply) starts another cycle of inflation and deflation. The process continues automatically at whatever frequency is set on the air controller.

Because the neoprene panel is resistant to oils and most chemicals and is also thick and tough enough to withstand severe abrasive service, PneuBin is applicable to most any bin flow problem.



Sizes: PneuBin panels are available in 14 standard sizes, 4" to 24" wide, 6" to 72" long. Special sizes can be made if required in quantity.

Send for "Flow Stoppage Report" and free literature. PneuBin engineers will gladly make recommendations, with no obligations on your part.



PneuBin is a product of
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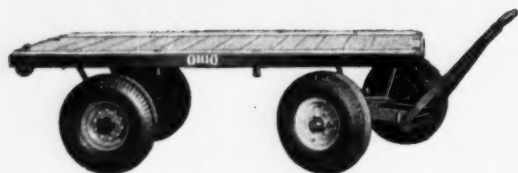
HYDRAULIC PUMPS & MOTORS

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Circle No. 106 on Reader Service Card for more information

OHIO

Industrial Trucks & Trailers



One Piece Tee Section Steel Frame Trailers

No. 3003 size 36" wide x 96" long x 27" high with capacity of 6000 pounds—Fifth Wheel Construction with Pneumatic Tires and Wheels with Timken Bearings. Hardwood Deck and Safety Rear connection. This trailer made in one ton to five ton capacity

Various Platform Sizes may be furnished.

Heavy Duty Trucks and Trailers to YOUR Specifications. Write for Detailed Information.

THE OHIO GALVANIZING & MFG. CO.
NILES Established 1902 OHIO

them are 1/2 inch square steel grid bars which are also welded to the strips. No frame surrounds this one-piece unit. Installation is effected by simply placing the magnetic grate in the hopper, the ends of the cylinders resting against its sides. The magnetic strength of the grate is guaranteed indefinitely by the manufacturer.

Circle 242 on Reader Service Card for more information

New Control Doubles Speed

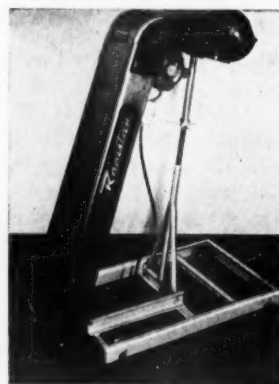
A third speed control on the Yale Worksaver Tractor has been developed by the Yale and Towne Manufacturing Company. This is said to provide a more flexible operation as it increases the speed range of this unit 100 percent. Finger-touch cams are located in the handle, with first and second speeds for walking. Third, or riding speed, is actuated by pressing a spring-loaded floor button. The compact size and range of speeds enables the tractor to operate easily in restricted areas.



Circle 243 on Reader Service Card for more information

Magnetic Conveyor

A magnetic parts and scrap conveyor is being manufactured by The Rapids-Standard Company, Inc. The conveyor belt elevates small ferrous parts and scrap from production machines to containers at space-saving inclines up to 72 degrees. Permanent magnets mounted under the bed of the "MP" unit attract and hold iron and steel parts in position as they move up the belt. Guard rails and tail cleats are unnecessary, because materials cannot slide back or roll off the belt once they are in the magnetic field. This feature minimizes parts working under the belt or cutting belt edges. The carrying belt is of smooth black Neoprene 10 inches wide with stitched-on cleats of the same material at 12-inch intervals. Belt speed is 75 feet per minute and is produced by a 1/2 horsepower motor through a 20 to 1 spur gear reducer. Motors, available in a choice of voltages and phases, are equipped with thermal overload protection. The conveyor is mounted on a 24 x 30 inch base equipped with four 3 1/2 inch diameter



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1-A Series—Stationary Caster



41-A Series—Structural Steel Stationary Caster



40-AH-VG Series—V-Grooved Wheel Structural Steel Heavy Duty Swivel Caster



3-A Series—Single Ball Race Swivel Caster



Dual Wheel Swivel Caster

Ask your industrial distributor . . .
he knows that for dependability, economy and trouble-free materials handling you just can't beat Bond Casters. Your distributor has the right Bond Casters for your jobs. Get your copy of Bond Catalog K-38 from him, or write direct.

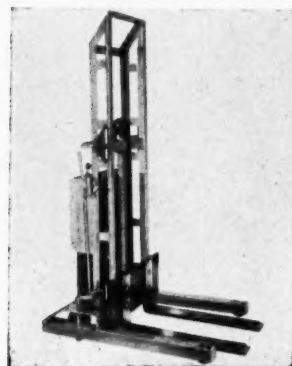
BOND FOUNDRY & MACHINE CO.
 Manheim, Pennsylvania

Circle 26 on Reader Service Card for more information
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wheels. The front of the base can be shoved under most wheeled tote trucks, with parts dropping from the conveyor overhang into container. A jack screw adjustment on the stand allows discharge height of the conveyor to be set at any point from 38 up to 56 inches.

Circle 244 on Reader Service Card for more information

Electric Portable Lift Truck



The Safeway electric portable lift truck Model EL-20 is described as being a "4 in 1" unit by the manufacturer, Safeway Industrial Equipment Co. The truck is designed to operate as a fork-lift, straddle-lift, platform-lift and drum-stacker, with lifting capacity of 1250 lbs., to a height of 68 inches. Manufacturer lists outstanding features of unit as: snap-on platform; hydraulic cylinder; built-in charger with automatic cut-off; key locked ignition switch and electronic cut-off switch.

Circle 245 on Reader Service Card for more information

Transformer Hand Truck

Extensive engineering and actual use trial has resulted in the production of the Model S-14 transformer truck by Orangeville Manufacturing Company. The truck is of all-steel, welded construction and weighs 160 pounds. Wheels to suit may be obtained. The transformer is hooked to the truck by means of an adjustable chain under any mounting hook or lid latch. Transformers up to 37.5 KVA and most types of 50 KVA may be handled.

Circle 246 on Reader Service Card for more information

Pallet-Stacking System



Stak-Mor Sales Company claims handling time cut be cut in half and storage space doubled by means of a pallet-stacking system that allows materials of almost any size or shape to be stacked in tiers. Through vertical supports and a self-aligning system, crushable and irregularly-shaped items can be stored on pallets two or more tiers high. Tailored to customer specifications and shipped

cut costs with "hands off" scrap removal

with CHIP-TOTE[®]

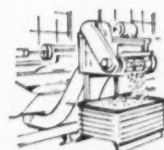
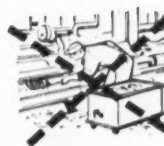
removes chips, turnings and borings continuously

2057 MF

Cut production costs by eliminating downtime for manual scrap removal!

While machines are in continuous operation, the MAY-FRAN CHIP-TOTE automatic scrap conveyor removes borings, turnings and chips from your high production machine tools. Design features permit a wide range of sizes to fit all standard multiple spindle or automatic machine tools.

To slash production costs, specify ... MAY-FRAN CHIP-TOTE automatic scrap conveyors.



DESIGNERS AND ENGINEERS OF COMPLETE SCRAP HANDLING SYSTEMS



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Circle No. 115 on Reader Service Card for more information

FLORINE MARKING MACHINE

With 3rd Wheel-Guide . . . Makes Safety & Parking Lines At Walking Speed. 20 Times Faster Than Hand Marking . . . Often Pays For Itself On First Job!

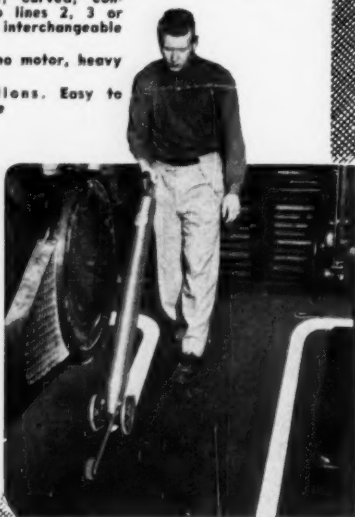
- New! Semi-pneumatic tires—oilite construction
- Third wheel 18" forward of carriage keeps machine "on track" long before marking begins
- Guide Wheel arm folds back at curb or wall, lets machine run right up to barrier
- Machine wheels to other areas at slight lift of handle
- Makes straight, curved, continuous or skip lines 2, 3 or 4" wide with interchangeable carriages
- Gravity feed, no motor, heavy gauge metal
- Holds 1½ gallons. Easy to clean and store

\$99.50

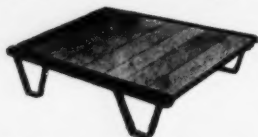
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Standard 2-way entry bolted type skid built to handle loads up to 5 tons.

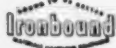


Standard box top welded to standard skid. Available too, with removable boxes. Handles many items in production and storage.



Flexible arrangement of boxes and skids permits tiering and stacking to meet your individual requirements. Provides quick availability, easy handling, or storage for complete units or parts.

Each of the units illustrated has an important use in modern industry. Ironbound skid platforms and box tops are prime sources of increased plant capacity so vitally needed today. Our representative can help you to increase your output and plant space. Catalog GP-7 may help you, too!



IRONBOUND

BOX & LUMBER COMPANY

Materials Handling Division

30 HOFFMAN PLACE • HILLSIDE, N. J.

MANUFACTURERS OF QUALITY BUILT SKIDS, SEMI-LIVE SKIDS, FLOOR TRUCKS, ROLL TRUCKS, DOLLIES AND PRY BARS

Circle No. 75 on Reader Service Card for more information

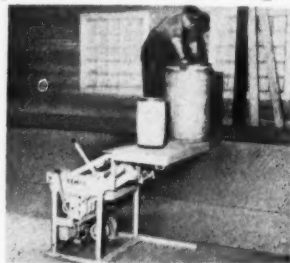
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complete, the pallet is constructed of seasoned oak, end-treated with wood preservative and fastened by staggered, cement-coated drive screw nails. Steel supports, 1.660" O.D., are available in any length.

Circle 247 on Reader Service Card for more information

Hydraulic Lift

In an adaptation of the hydraulic tailgate, equipment has been developed to lift loads to a height of 60 inches—to a conveyor, dock, or higher point. The machine, portable if desired, is essentially a regular tailgate mechanism and platform mounted on a sturdy base. An operator can ride with the load, which can be stopped and held securely at any point on the way up or down. The unit comes in two capacities—2000 and 4000 lbs.—and requires no installation. Its platform can be equipped with boxes, railings or other arrangements to fit special requirements. Called the "Cemco-lift", it is manufactured by Cemco Industries, Inc.



Circle 248 on Reader Service Card for more information

CHAINVEYOR

**NEW
LOW COST
OVERHEAD
CONVEYOR**
of
Revolutionary
Design
for loads up
to 60 lbs.
per foot.



Typical Industrial Installation—illustrates flexibility and simplicity of installation. System is 190 feet long with equivalent of 52 vertical and horizontal 45-degree curves. Total weight carried, 5800 lbs. Driven by ½ HP motor at speed of 10 to 30 F.P.M.

We can't adequately describe the advantages of CHAINVEYOR in limited space. Completely enclosed — Simplicity of design — Reduced bulk, weight — 15" radius curves — Full ball bearing chain — Curves, chain scientifically heat-treated to "file hardness" triples life — Simple rugged power drive — So easily installed that most buyers do it themselves for a total cost that is most interesting.

New catalog gives complete information
Write for it!

Nationally Distributed by
**MATHEWS CONVEYER
COMPANY**

Ellwood City, Pa.
with offices in all
principal cities.



United States Spring & Bumper Co.

4951 Alcoa, Box 2475 Terminal Annex
Los Angeles 58, California

Circle No. 132 on Reader Service Card for more information

FLOW • AUGUST, 1954

"Stif-Arm" Bucket Hanger

A multiplane bucket trolley conveyor with a patented "Stif-Arm" bucket hanger design said to result in lower costs is announced by Hapman Conveyors, Inc. The conveyor trolley consists of a single I-beam, which may lie in a horizontal, inclined or vertical position, or include sections in all three directions. In addition, conveyor path may have turns in either or both horizontal and vertical planes. A universal-type chain runs parallel to the I-beam with standard roller attachments. The bucket hanger design keeps buckets upright, permitting a multiple-plane path with a single conveyor. Buckets are self-loading and self-unloading to handle bulk materials automatically.

Circle 249 on Reader Service Card for more information

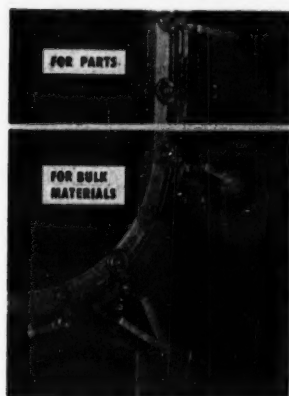
Corrosive Chemical Buggy

Recently announced by Automotive Rubber Company, Inc. was the availability of an acid wagon under the trade name "Acid Buggy". The truck can be produced in a variety of capacities. Model XB-425 will hold more than 400 gallons. The buggy comes equipped with tow bar, axles, wheels, 6.00 x 16 tires, four 50 foot lengths of acid hose with nozzles, overflow funnel, gauge glass and fittings, pneumatic controls, air filter, air gauge and gauge board, and 75 feet of 1/2 inch diameter hose. The rubber-line, 1500 pound tank is mounted on a frame which, with accessories, weighs 1300 pounds.

Circle 250 on Reader Service Card for more information

High Lift, High Load Truck

Made in three sizes with lifting heights of 68, 80 and 100 inches, this portable Lift Truck produced by Safeway Industrial Equipment Corp. has a lifting capacity of 1250 lbs. and is designed for one man operation. Its hydraulic system, powered by an automotive type battery, is equipped with a built-in trickle charger having automatic cut-off. An electronic switch cuts off power at maximum height and prevents jarring of load and damage



... LOWEST PRICE
OF ANY CRANE SCALE ON MARKET TODAY!

**combine weighing
with moving in
ONE operation**

... DEPENDABLE ACCURACY
CALIBRATED WITH CERTIFIED DEAD WEIGHTS!



the
DILLON
Weight Indicator

**Precision Ground Knife Edges and
Pivots . . . the Universal
"Standard of Accuracy"**

Accurate within one division of indicated reading

CAPACITIES:

0-250 lbs.
0-500 lbs.
0-1000 lbs.
0-2500 lbs.
0-5000 lbs.

Hundreds of plants are using the Dillon Weight Indicator to eliminate separate weighing operations—to weigh materials of all types while moving, inventorying, shipping or receiving—making ONE operation instead of two.

And with the DILLON you are assured of both extreme ruggedness as well as accuracy. (Calibrated with Certified dead weights.) Completely mechanical in operation, it contains no sluggish liquid to leak, and it is unaffected by even a wide range of temperature variation—retains its dependable accuracy day in and day out! Simple, patented construction permits low cost plus the ability to withstand long, hard usage. Compact. Easily handled by one man.



2 1/4 tons of
scrap machinery
being weighed by a
Dillon Scale prior
to loading and
disposal

Sales Reps:
Some Territories
open—
"Write"

Write Today for Illustrated Catalog

W. C. DILLON & CO., Inc.

14620 KESWICK ST., VAN NUYS, (Suburb of Los Angeles) CALIF.
Circle No. 48 on Reader Service Card for more information

Circle No. 46 on Reader Service Card for more information

Trojan
TRACTOR
for
POWER TRAVEL

Attached by a simple draw-bar, the Trojan Tractor quickly converts existing, slow, hand-pushed hoists and light overhead cranes into fast, power-traveled units. Save time, effort; reduce material handling costs.

• Ask for Trojan Tractor Bulletin 810 today.

DETROIT HOIST & MACHINE CO.
8263 Marrow St., Detroit 11, Mich.

Designers and Manufacturers of Hoists and Cranes
Since 1905



Speed your 1954 Traffic with a 28 year old idea

Above is one of seven Nutting Tow-line Systems currently saving 25% on handling costs for Consolidated Freightways, Inc.

Nutting

Since 1891

Nutting has been designing trucks for use with overhead or under-floor conveyors since 1926 and now provides 13 standard models with 5 types of tow mechanisms. Whether you have or are considering an overhead or under-floor system, whether your loads are 300 or 3,000 lbs., Nutting has the trucks for the perfect solution to your materials handling problem. Write for Bulletin 54-TL or call your Nutting Sales Engineer—he's listed under "Casters" or "Trucks" in your classified directory.

NUTTING TRUCK & CASTER CO.
1608 DIVISION ST., FARBULT, MINN.

Export Sales Representative: School International, Inc.
4237 North Lincoln Ave., Chicago 18, Ill.

Circle No. 105 on Reader Service Card for more information

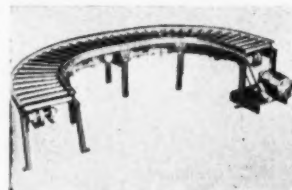
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to the hydraulic system. A hand operated brake not only prevents movement of the truck when loading and unloading but also brakes the truck for travelling on inclines. The truck is of the fork lift type, but it can be equipped with a "snap-on" platform to make it more versatile. This unit is recommended by the manufacturer for such jobs as transferring dies; stacking drums, bales or other objects; and for loading and unloading vehicles where a loading dock is not available.

Circle 251 on Reader Service Card for more information

Live Rollers Curve 180 Degrees

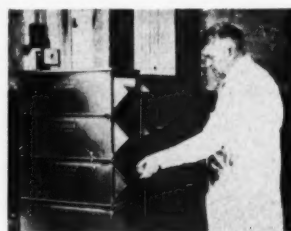
A 180 degree curve of live rollers for horizontal operation has been designed by Alvey Conveyor Manufacturing Company. The rollers are actuated by contact with a bottom-mounted flexible belt. Resulting live roller action transports packages around the length of the completely level curve. The manufacturer states that the new power curve units will be available with 30, 45, 90 or 180 degrees of total travel, in nominal conveyor widths over a broad range of sizes.



Circle 252 on Reader Service Card for more information

Open End Hopper Box

The Platt and Labonia Company has added to its regular line of sheet metal tote boxes an open end hopper box with stacking features. The box is designed to insure quick and safe handling of material during shop production operations. The hopper opening feature combined with the stacking arrangement allows easy access to the material in all boxes while stacked one on top of another. They are available in eight standard sizes, with a choice of two weights of material (16 and 18 gauge) and in sizes up to 22 inches long by 12 inches wide by 8 inches high. One of the outstanding features of the box is said to be its sturdy all-welded construction.



Circle 253 on Reader Service Card for more information

Small Engine Power Unit

Cushman Motor Works, Inc. is now in full scale production of what is said to be an entirely new small engine power unit. Basically designed around the company's "Husky" Model M8, 17.8 cubic inch displacement, four cycle, single cylinder air cooled engine which develops 6.0 hp at 3200 rpm, the clutch and transmission compo-

nents can also be used with the Model M6 rated at 3.2 hp or the Model M7 rated at 4.6 hp. The engine has a bell housing type side plate, automotive or manual straight line drive clutch and a directly attached transmission with three speeds forward and a reverse. The clutch is of the single disc dry type with manual release.

Circle 254 on Reader Service Card for more information

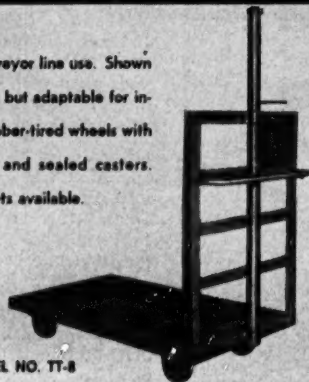
Neoplastic Covered Rollers

Neoplastic covering is now available on conveyor rollers of all standard sizes and shapes and with any reasonable thickness of covering required. Rollers can be furnished in any length straight face, also on concave and tapered types. Neoplastic covered wheels for wheel conveyor in all standard sizes are also available. The covering is applied in liquid form. The thickness of covering that can be obtained with one application varies with the length of time the part is dipped and the gauge of metal. Thickness normally ranges from $\frac{1}{8}$ inch on smaller rolls to $\frac{1}{4}$ inch on larger sizes. Neoplastic is not affected by steam, hot or cold water, oil, grease or alkalis, acids, salts or inorganic acids. Its use is desirable where a cushioning effect is required or where the articles handled have a finished surface which might be marred by contact with the rollers not covered. Manufacturer is the Logan Company. Circle 255 on Reader Service Card for more information

JAKES

America's Finest
Industrial Trucks and Trailers

Tow truck for conveyor line use. Shown for over-head line but adaptable for in-floor system. Rubber-tired wheels with sealed bearings and sealed casters. Specification sheets available.



MODEL NO. TT-8

JAKES FOUNDRY COMPANY

Established 1891

2800 Charlotte Avenue

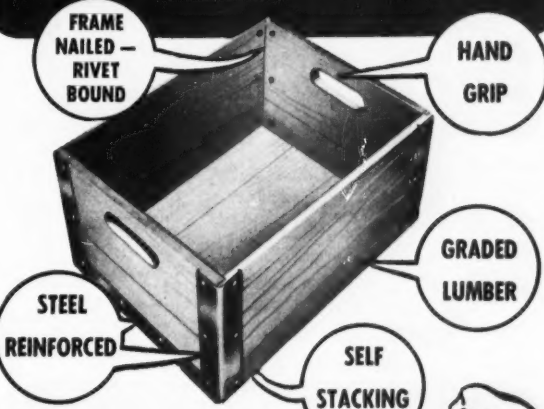
Nashville 9, Tennessee

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FLOW • AUGUST, 1954



CESCO'S TOTE-SHOP BOXES

DO YOUR ROUGH/TOUGH JOB
EFFICIENTLY • EASILY • ECONOMICALLY
on Conveyors • Pallets • Hand Trucks
Skid Platforms • or what have you
RUGGED CONSTRUCTION • PRIME MATERIALS



Model #WB (Wood Bottom)

Stock sizes will accommodate loads up to 200 lbs., possibly greater, depending upon material packed and handling method.

MODEL WB

STANDARD SIZES AVAILABLE FROM STOCK
(Prices net - F. O. B. Northampton, Mass.)

Lots of	WB-1	WB-2	WB-3
2000	\$1.96	\$2.14	\$2.28
1000	1.99	2.17	2.31
500	2.02	2.20	2.34
250	2.07	2.25	2.39
100	2.12	2.30	2.44

Model	Size	Length	Width	Depth	Weight
WB-1	I. D.	14 $\frac{1}{4}$ "	11 $\frac{1}{4}$ "	9"	11 $\frac{3}{4}$ lbs.
WB-2	I. D.	18"	11 $\frac{1}{4}$ "	9"	13 lbs.
WB-3	I. D.	20"	11 $\frac{1}{4}$ "	9"	14 lbs.

SPECIAL APPLICATION



SECTIONAL
TOTE TRAY

STACK
SECURELY...
CONVENIENTLY!



Write today for quotations on special sizes... Facilities available for special markings in various colors and numbers for identification purposes. Please submit detailed specifications.

CESCO

CONTAINER CO.
General Offices: 475 Fifth Ave., New York 17, N. Y.
Factory: NORTHAMPTON, MASS.

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Circle 96 on Reader Service Card for more information

MERRILL MATERIALS HANDLING DEVICES

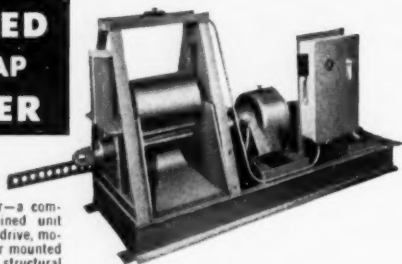


MERRILL BROTHERS
56-74 ARNOLD AVENUE MASPETH, N. Y.

MAKES BALES

of strip shearings — stringy scrap

ALLIED SCRAP BALER



The Allied Baler—a complete, self-contained unit including geared drive, motor and controller mounted on a portable, structural steel base.



Lead-in piece is hooked to winding spindle. Tangled mass is dragged in.

Bale partly formed. Compacting roller and contour of baling box form dense uniform bales.

Full bale completed, 19" dia., 19" lg., approx. 400 lbs. ready for sale.

Write for further information.



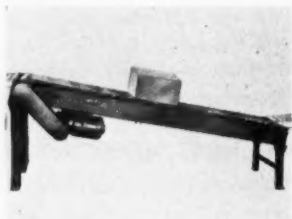
Allied Steel and Conveyors, Inc.
17309 Healy Ave. • Detroit 12, Mich.

Circle No. 145 on Reader Service Card for more information
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Conveyor Unit Booster

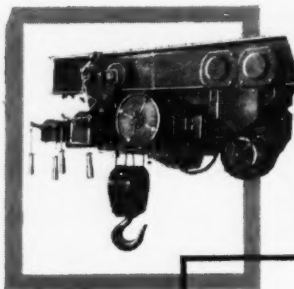
A new Unit Booster is announced by the Lamson Corporation. Said to be a complete package in itself, the unit can be incorporated into an engineered conveyor system or can be purchased and installed by any competent mechanic for special purpose jobs. For normal package conveyor loads, it can be used for inclines up to 30 degrees. The Booster is made of a 5 foot drive and a 5 foot take-up section, which may be joined together to make a 10 foot unit. Intermediate sections may be added to extend the unit in multiple lengths of 5 to 60 feet. Standard gear head motors from 1/3 to 1 h.p. are used to drive the 8 in pulley.

Circle 256 on Reader Service Card for more information



Light Stacking Pallet

Equipment Manufacturing, Inc. announces the development of a stacking pallet, said to be comparatively light but substantial, for the handling of cylindrical shapes that stand on end. The pallet has formed strap legs. Angle iron is used in the frame construction and extends up from the feet to form side supports 28 inches high with



PROFESSIONAL WEIGHT LIFTER ELECTROLIFT

It takes just one man to lift and move those heavy loads around your plant with ElectroLift—the modern, time and man-saving worm drive hoist.

Designed for high-speed operation, ElectroLift hoists are safe, compact, smooth-operating and quiet. Available in sizes up to 6 tons with optional pushbutton control.

For complete details on the features of ElectroLift consult your ElectroLift representative listed in telephone directory or write:

ElectroLift, Inc.
204 Sargeant Avenue, Clifton, N. J.

ELECTROLIFT

2176

Circle No. 54 on Reader Service Card for more information
FLOW • AUGUST, 1954

horizontal and vertical intersecting cross members. Ends are open for easy loading from either side and hinged cross arms which drop out of the way for loading can be raised and hooked on studs joining the side supports and enclosing the load. A durable hardwood floor is used in the pallet and access is provided for lift truck handling from 4 sides. Various underclearances and side support heights can be incorporated to meet special requirements of the customer.

Circle 257 on Reader Service Card for more information

Independent Crane Carrier

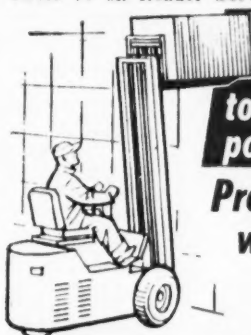
A crane carrier, known as the "CW-312" and available for all make cranes in the 20 to 25 ton class, either new or used, is available from Cook Bros. Equipment Co. The carrier has independent power supply, permitting independent travel and swing.

The power plant, assembled on a sub-frame, consists of 100 h.p. gas engine, torque converter, 3 speed and reverse transmission, auxiliary transmission with emergency and/or parking brake. All components are said to be easily accessible.

Circle 258 on Reader Service Card for more information



Circle 73 on Reader Service Card for more information



There's a
BEST TIME
to service
powered equipment

Prevent major repair
with TIMELY care



HOBBS Engine Hour METERS

Manufacturers specify how often maintenance is needed for trouble-free operation of lift trucks. Your "inside fleet" lasts longer and requires fewer repairs when lubrication, overhaul, oil change, etc., are done **ON TIME**. The HOBBS HOUR METER TELLS YOU WHEN.

New and improved
through continuing
engineering research

NOT A REVOLUTION COUNTER
... but an electrical timing instrument that shows total HOURS and MINUTES of equipment operation. This accuracy is important for genuinely effective protective maintenance.

APPROVED BY LEADING MANUFACTURERS
Leading manufacturers install the HOBBS HOUR METER as original equipment ... or recommend it as an approved accessory. Ruggedly built and easy to install. For full details, ask your factory branch, representative or distributor ... or write:

ORIGINATED AND MANUFACTURED EXCLUSIVELY BY

John W. Hobbs Corporation
2061 YALE BLVD. SPRINGFIELD, ILLINOIS

Dust-Eater

*Parker Turbo-Sweep model for Quick,
Cleaner Floor Maintenance*



Revolutionary new design gives all the benefits of dust-free power sweeping ... plus the traditional maneuverability, easy maintenance and low cost of Parker's other manual and motorized models.

Dust bag and trash hopper are easily emptied; hand-high controls adjust throttle, clutch, hopper and brush height. Handles dirt, trash, scraps—50,000 sq. ft. per hr. Optional riding sulky.

Ask for a free demonstration.

PARKER
INDUSTRIAL FLOOR SWEEPER

Manual ... Motorized ... Dust Control

Parker Sweeper Co., 68 Bechtle Ave.
Springfield, Ohio

Circle No. 108 on Reader Service Card
FLOW • AUGUST, 1954

1ST AND STILL KING BARREL AND DRUM TRUCK THE DICO "Float-away"

... yes, the original "Float-away" is still your best buy for barrels and drums!

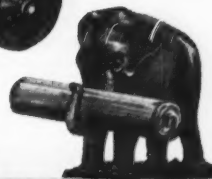
Quick and easy loading—axle and wheels never leave the floor in loading process. Stands by itself when not in use—an important safety factor. Handles "bilged" or straight-sided barrels equally efficiently. Equipped with DICO "HD" indestructible steel "Molded-on" rubber tired, roller bearing wheels.



SEE
YOUR
JOBBER
OR
WRITE
FOR
CATALOG

DICO

"ALL-STEEL" TRUCKS
for LONGER WEAR
and
MAXIMUM STRENGTH



DES MOINES 5, IOWA

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ALBION INDUSTRIAL CASTERS



Extra Heavy Duty
Casters



Triple-Wheel
Swivel Casters



"Thrifty"—Medium
Duty Casters



Square Tube
Top Casters



V-Groove Wheel
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Pipe Base Casters



Dual Wheel
Casters



Giant Trailer
Casters



Pneumatic Tire
Casters



Heavy Duty
Casters

Immediately available in a broad range of sizes, types and capacities to meet every conceivable industrial application.

Specify Albion, when you need rugged dependability, complete protection . . . plus amazing economies.

Represented in Canada by:
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Queen St. W., Toronto

**ai ALBION
INDUSTRIES Inc.**

ALBION • MICHIGAN

Circle No. 2 on Reader Service Card

164

CLASSIFIED ADVERTISING SECTION

FOR SALE

FORK LIFT TRUCKS

TOWMOTORS—LT-35, LT-44, LT-50, LT-56, LT-62, and LT-72, CLARKS—Clippers, Carloaders, Utilitrucks, and Yardlifts. HYSTERS—20s, 40s, 75s, and 150s. All in various lifting heights and fork lengths. Many other makes and models to choose from. We RENT—BUY—SELL—LEASE fork lift trucks. ATLAS LIFT TRUCK RENTALS, INC., 1139 So. Wabash Ave., Chicago 5, Ill., WEBster 9-3438.

ELECTRIC FORK TRUCK—BAKER 2000 LBS. BATTERY AND CHARGER—ONE USER, 4 YEARS OLD. GOOD CONDITION, REASONABLE.

SHEAN EQUIPMENT CO.
205 Harrison St.
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WRIGHT Three Ton Speedway Motorized Hoist and Close-Pack Grab. Excellent Condition. William L. Hoge and Co., 415 North 32nd St., Louisville, Ky.

HELP WANTED

HYDRAULIC ENGINEER

With experience in fork truck hydraulic applications. Good solid position open. Send resume of background to c/o FLOW, Box 8154.

BULK MATERIALS HANDLING

Select equipment and design installation for bulk materials handling on a company wide basis. Should have experience in the development of systems for handling and conveying of bulk products.

Pillsbury Mills, rapidly expanding food manufacturer, has the above staff level opening in the Mpls. general offices for engineer of demonstrated professional capacity who desires heavy responsibility. This position will entail heavy administrative as well as technical responsibilities. Salary is commensurate with ability and experience.

Write
Personnel Dept.
PILLSBURY MILLS
Minneapolis 2, Minn.

REPRESENTATIVES WANTED

MANUFACTURERS AGENT! Prominent manufacturer of famous make BRUSH PEN seeks aggressive Mfgs. Agents calling on Wholesalers, Jobbers, and Distributors to expand sales of their fast selling, time proven, amazing Brush pen that writes on practically all surfaces. Prefer organization with successful record in sales of non-conflicting allied lines. All replies confidential. Lockwood Co., 366C Boston Post Road, Milford, Conn.

Extra N. & F. Silo assures against coal shortage

To avoid running out of coal in the event of delivery failure, a Michigan manufacturer had us erect two 18 x 60 ft. silos. One of them is kept filled with a reserve supply of 381 tons. Then, if trains or trucks become snowbound, the plant doesn't have to shut down as had frequently happened in the past.

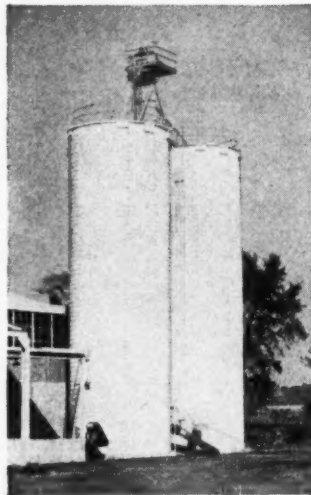
This is a splendid idea for users of all kinds of flowable bulk materials—extra storage space for emergencies. The additional cost is trivial in relation to the loss occasioned by work stoppage.

And, of course, Neff & Fry Silos are the storage bins to use on account of their many advantages.

It will pay you to know the facts.

(Not exported except to Canada and Mexico.)

THE NEFF & FRY CO. • 110 Elm St., Camden, Ohio



Descriptive literature is yours for the asking. You won't be subjected to personal solicitation by requesting literature.

NEFF & FRY ▶ **SUPER-CONCRETE STAVE
STORAGE BINS**

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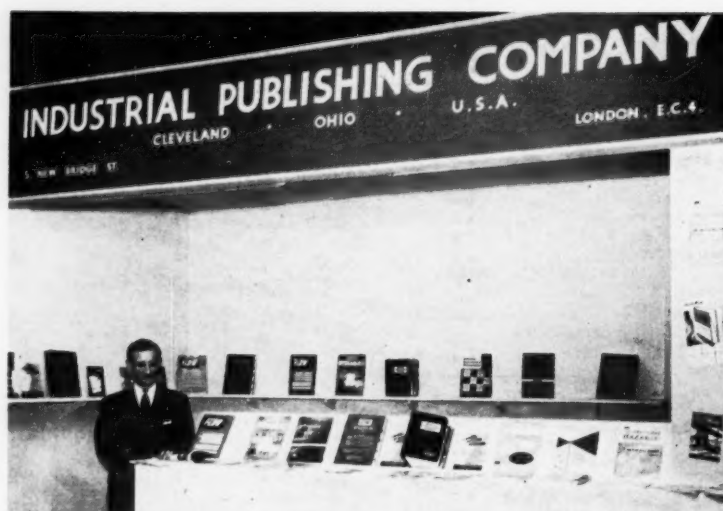
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London Exhibit Draws 50,000

MORE than 50,000 visitors from 60 countries attended the fourth Mechanical Handling Exhibition held at Olympia, London, June 9-19. FLOW's London representative, John A. Lankester (shown in the photo) was on hand to greet visitors to the FLOW booth, as was FLOW's publisher and president, Irving B. Hexter, who flew to London for the event.

The high proportion of visitors from all over the world tended to indicate the increasing number of overseas buyers who are interested in equipment and ideas in the material handling world—better methods of handling which will cut costs and increase profits. It was noted that the British manufacturers have cleaned up the lines of their products, without detracting from their durability or performance. Much of the latest machinery, though not new in conception, embodied improvements in design and versatility which



have not previously been exhibited in Europe. An interesting trend noted was the increasing popularity of diesel engines which offer the advantages of reduced maintenance and fuel economy, in a country where gasoline is much

higher than in the U.S. There were many new exhibitors, particularly in the field of hydraulic and pneumatic component manufacturers, in addition to the lift truck, conveyor and construction equipment manufacturers present.

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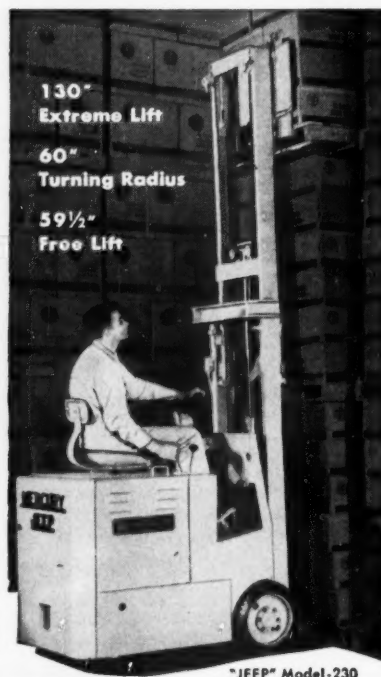
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"We Saved SIX MAN HOURS on the FIRST THREE TRUCKS we loaded!"

"I feel our Magliner Dock Board fully paid for itself in 60 days or less!" says C. J. Monroe of Rycenga Manufacturing Company, Detroit, Michigan.

"We equipped our loading dock with a Magliner magnesium dock board after a thorough investigation of other products available, and only after considerable deliberation.

"We considered the possibility of a hydraulic leveling ramp at a cost of about \$3,000.00, but found that in addition to the relatively heavy initial investment required, this type of equipment also involved an element of maintenance.

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"Our plant was recently built and occupies about 60,000 sq. ft. of floor space. It contains



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a single station well, which is located inside the building. All our shipping and receiving is done at this point, so our Magliner dock board and ramp sees a lot of service.

"We saved 6 man hours on the first 3 trucks we loaded! I feel our Magliner fully paid for itself in 60 days or less!"

"The old steel plate we used before was a definite safety hazard. Our company regards our Magliner as an exceptional investment just from the safety angle alone. When you consider in addition, the time and money we are saving, plus the increased shipping and receiving capacity we get through the use of our Magliner dock board and ramp—I don't know of a better way to promote efficiency, safety, and economy on the loading dock."



Today's highway trailers vary greatly in floor height. To adequately service high-floor trailers, a ramp used in combination with the dock board is the most economical and practical solution. The ramp is used only when necessary to gain that additional height without exceeding permissible slope. The ramp is securely locked in position with Magliner's exclusive patented drop lock.

The experience of Rycenga Manufacturing Company is typical of many companies across the nation who have standardized on Magliner Dock Boards. Without exception these companies have found that Magliners speed loading traffic efficiently and safely, and cut loading costs. They too have found that Magline offers all the important dock board advantages.

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Did you ever stop to think of how FLOW has taken leadership in the material handling industry? We don't mean to brag but we're pretty proud of this record:

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THE FIRST magazine to "get behind" an all-industry show FLOW—1947

THE FIRST (and only) to publish an all-inclusive directory for the industry FLOW—1947

THE FIRST to help standardize the nomenclature in the field FLOW DIRECTORY—1947

THE FIRST to "get-behind" the formation of the present Material Handling Institute FLOW—1948

THE FIRST to recognize that there is a "major" and a "marginal" market in its field FLOW QUARTERLY—1951

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